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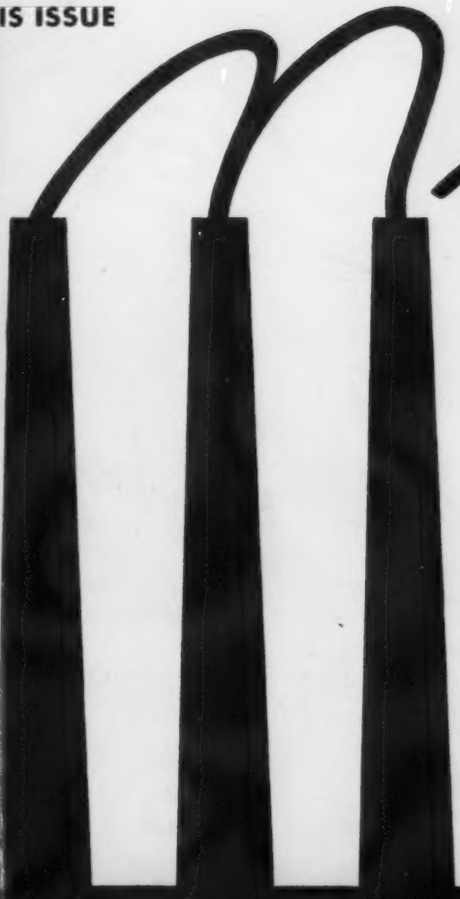
MARCH 1937

ELECTRICAL WEST

THIS ISSUE



Manufacturers' Directory

Added Feature — New Product Display

More than a million families are getting this message

★ This colorful poster with its simple, human interest appeal is attracting wide attention throughout Central and Southern California. Yet it is only one small part of Edison's campaign to sell the advantages of electric cookery. As an indication of its success, range installations in our territory are up 22% from a year ago, and we look for a still greater advance during the months to come. 1937 will reward dealers who devote time and energy to electric range sales. Will you get your share?

Edison

SOUTHERN CALIFORNIA EDISON COMPANY LTD.

3-37

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ELECTRICAL WEST

WITH WHICH ARE CONSOLIDATED THE "ELECTRICAL JOURNAL," THE "JOURNAL OF ELECTRICITY, POWER & GAS," AND THE "JOURNAL OF ELECTRICITY"

ESTABLISHED 1887

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PREVIEW the new ranges and refrigerators by turning to the cooperation section beginning page 28. They will, the industry predicts, sell even faster than last year's record-breaking models.

●

ENGINEERS who read the kitchen design paper on page 41 will not view loadbuilding as an academic problem of concern to the sales department only. The paper is a N. W. L. & P. Assn. report.

●

FUNDAMENTAL to converting metering sequence are two considerations: What economies are to be obtained; what there is to work with. Metering reports of the P.C.E.A., pages 38 and 40, analyze experiences with both.

●

SEE what can be done with modern lighting. Pictured on pages 50 to 53, is the installation at the new courthouse of Alameda County, Calif.

Next Month

●

"What in your opinion should the industry do to increase the range and, or water heater business?" Every conceivable authority has been asked this question by ELECTRICAL WEST. The answers of manufacturers, distributors, wholesalers, dealers, salesmen, utility commercial men and others will be contained in the April Range and Water Heater Survey Number. Coupled with the foregoing discussion will be an analysis of range and water heater developments on the Coast *to date.*

GENERAL ELECTRIC PROVIDES
A Complete Line of Wiring Materials

Illustrated here are only a few of the many materials in the G-E Wiring Material Line. They are all well engineered — made to be used together. Their high quality is unquestioned — the standard for the industry. Whatever building you wish to wire be it a 50-story office building, a huge factory or a home you'll find exactly the right conduit, wiring devices and wire and cable in the G-E line with the added advantage of being able to buy them all in one place made by one manufacturer. For detailed information about General Electric Wiring Materials see your nearest G-E Merchandise Distributor or write to Section CDW-923, Appliance and Merchandise Department, General Electric Company, Bridgeport, Connecticut.

GENERAL ELECTRIC

WIRING MATERIALS

APPLIANCE AND MERCHANDISE DEPARTMENT, GENERAL ELECTRIC COMPANY, BRIDGEPORT, CONNECTICUT

OVER 2 MILLION DOLLARS IN SALES IN 1936 . . . AND STILL LEADING!

NESCO Roastmaster

A NESCO PRODUCT

YOUR CUSTOMERS definitely prefer NESCO! Sales records prove it! First to manufacture an electric roaster, NESCO has led the field with the greatest volume of sales every year. 1937 will be no exception! With the greatest advertising program in its history, sound films to augment your selling efforts, generous dealer helps to bolster your merchandising plans — NESCO will prove a profit leader for you in 1937. Buy what your customers are asking for! Get complete details regarding our ability to help you make NESCO SALES. Study the 10 salient features at the right. Go NESCO in 1937!

10 POINT PROGRAM OF IMPROVEMENTS

1. Insulated Stainless Steel Covers
2. Patented "One-Lift" Pan Set
3. Stainless Steel Pan Set Covers
4. Steam Cookers for all models
5. Smokeless, Spatterless Broiler
6. New Signal Light Heat Control
7. Bake Rack and Cooky Tin
8. Higher Wattage for 1937 models
9. More Efficient Insulation
10. Each Model Serial Numbered

NEW NESCO STEAM COOKER
Increases Roastmaster meal-capacity to largest on market — 3 gallon or 18-lb. fowl in Roaster — 1½ gallons for vegetables in Steam Cooker.

NEW NESCO ELECTRIC CASSEROLE
A popular seller in new design. Will introduce your customers to the pleasures of electrically prepared foods. Auxiliary Steam Cooker also available.

NATIONAL ENAMELING AND STAMPING COMPANY

Executive Office: 270 N. TWELFTH STREET, MILWAUKEE, WISCONSIN

Factories and Branches: Milwaukee — Chicago — New York — Baltimore — Philadelphia — Granite City, Ill. — San Francisco

ENAMELED WARE | JAPANNED WARE | TIN WARE | GALVANIZED WARE | ELECTRICAL APPLIANCES | KEROSENE RANGES AND HEATERS

PERMAFLECTOR
Built-In Direct Lighting

Modern illumination for modern stores. Efficient direct lighting from concealed sources. Recessed Permaflectors control the light, delivering high intensity of illumination to the merchandise without any glare and with no feeling of excessive brightness.

Standardized equipment. Concentrating type Permaflectors for high ceilings; extensive Permaflectors for low ceilings. Units may be arranged to create patterns on the ceiling and take on the guise of custom-built equipment.

A lighting intensity of 160-foot-candles confined to the display counters is produced in this very modern jewelry store, from an installation of Permaflector Built-In Lighting. Recessed wall display cases are also illuminated from built-in lighting equipment.

A total of 21 direct lighting units of the "GR" type are employed for the lighting of the Garland Sport Shop, at Wenatchee, Wash.

An average intensity of 14 foot-candles is produced in this modern market from an installation of 516 specially built direct lighting units.

Lighting from Concealed Sources

The amazing thing about Permaflector Built-In Direct Lighting is the fact that very high intensities, 30 to 50 foot-candles, can be delivered to the merchandise with nominal wattages. Over limited areas, as in the jewelry store above illustrated, an intensity of 160 foot-candles, at nominal energy consumption, is available.

Diffusing glass plate, or roundel, conceals the reflector and lamp and is used for low mounting. For high mounting, concentric louvers are used. For illumination confined to show case area, louvers are employed.

Write to our nearest representative (listed below) for complete details on this modern built-in direct lighting equipment. He will be glad to work with you on any specific installations.

PITTSBURGH REFLECTOR COMPANY

OLIVER BUILDING, PITTSBURGH, PA.

FRANK E. HASTINGS
810 Transportation Building
LOS ANGELES

HAL. A. GARDNER
544 Market St.
SAN FRANCISCO

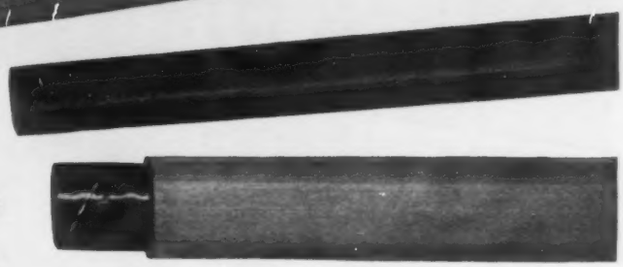
Pittsburgh Permaflector

RAYMOND ACKERMAN
318 Dooly Block
SALT LAKE CITY

LYMAN D. MORGAN
239 Securities Bldg.
SEATTLE

THERE'S A COPY FOR EVERYONE

...AND EVERYONE WILL WANT ONE



An entirely NEW and MORE USEFUL catalog of ALL the wires and cables for residences, factories, hotels, apartment houses, schools, theatres, office buildings, hospitals, municipal, and other types of buildings. New convenience in arrangement, SIMPLIFIED tabular data, and quick-reference index. Every man who specifies, plans, purchases or installs electrical wiring should have a copy. FREE—for the asking!

Incorporates comprehensive data on: **GUARDIAN BUILDING WIRE—RUBBER INSULATED CABLES FOR HIGHER VOLTAGES—VARNISHED CAMBRIC CABLES—ROMEX NON-METALLIC SHEATHED CABLE—SERVICE ENTRANCE CABLES —AND RELATED TYPES OF WIRES AND CABLES.**

GENERAL CABLE CORPORATION
420 Lexington Avenue, New York City

Please mail me a copy of your new **BUILDING WIRE** Catalog.

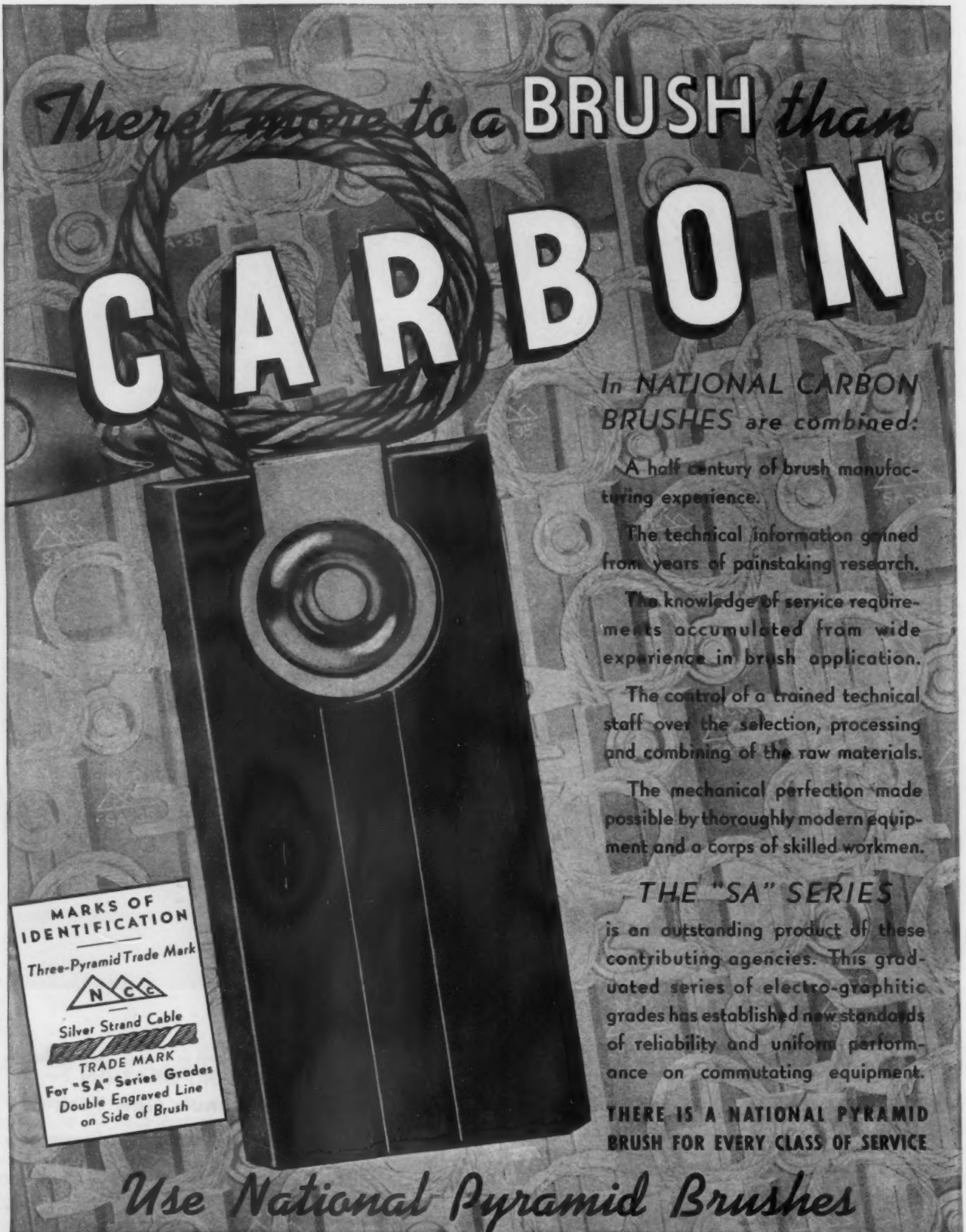
NAME_____

COMPANY_____

STREET_____

CITY_____ STATE_____

Sales Offices: ATLANTA • BOSTON • BUFFALO • CHICAGO • CLEVELAND • DALLAS • DETROIT • LOS ANGELES NEW YORK • PHILADELPHIA • PITTSBURGH • ROME • SAN FRANCISCO • ST. LOUIS • SEATTLE • WASHINGTON, D.C.


There's more to a BRUSH than
CARBON
In NATIONAL CARBON BRUSHES are combined:
A half century of brush manufacturing experience.
The technical information gained from years of painstaking research.
The knowledge of service requirements accumulated from wide experience in brush application.
The control of a trained technical staff over the selection, processing and combining of the raw materials.
The mechanical perfection made possible by thoroughly modern equipment and a corps of skilled workmen.
THE "SA" SERIES
is an outstanding product of these contributing agencies. This graduated series of electro-graphitic grades has established new standards of reliability and uniform performance on commutating equipment.
THERE IS A NATIONAL PYRAMID BRUSH FOR EVERY CLASS OF SERVICE
MARKS OF IDENTIFICATION
Three-Pyramid Trade Mark
N C C
Silver Strand Cable
TRADE MARK
For "SA" Series Grades
Double Engraved Line
on Side of Brush
Use National Pyramid Brushes
NATIONAL CARBON COMPANY, INC.
Unit of Union Carbide UCC and Carbon Corporation
Carbon Sales Division, Cleveland, Ohio
General Offices: 30 East 42nd Street, New York, N. Y.
BRANCH SALES OFFICES NEW YORK - PITTSBURGH - CHICAGO - SAN FRANCISCO

PRICES SLASHED 2/3

Now ONLY $7.00 UP...LIST

USE NOFUZE CIRCUIT PROTECTION ON *Every* WIRING JOB

Safety and convenience of Nofuze Circuit Protection are now available at little if any greater cost than for switches and fuses! Years of development have resulted in a new Westinghouse Nofuze Load Center equipped with "De-ion" circuit breakers at prices so low it can be used on EVERY new wiring job, EVERY range or water heater installation, EVERY rewiring project.

All the time-proved qualities of Westinghouse Nofuze circuit protection—installed by many in spite of the former price differential—have been retained in the new, low-cost Load Center. It is thoroughly dependable, factory-sealed against tampering, safe, easy to wire, and is certified by the Underwriters' Laboratories.

Every Nofuze installation made or recommended by the power company will earn customer good will and eliminate service calls. To contractors the Nofuze Load Center means a new and powerful sales tool with which to close quality wiring contracts. Every prospective wiring customer who sees Nofuze will want it—and will want the wiring done by the contractor who recommended it.

Write today for Catalog 29-300 showing the wide range of available wiring combinations and amazing new low prices. Westinghouse Elec. & Mfg. Co., Dept. 5-N, E. Pittsburgh, Pa. J 60063

Trip . . . the wiring system is automatically protected, when a short circuit or dangerous overload occurs and until the cause of the overload is removed.

Flip . . . electric service is instantly restored—simply by flipping the breaker handle, first to "OFF" and then to "ON." Nothing to renew or replace.

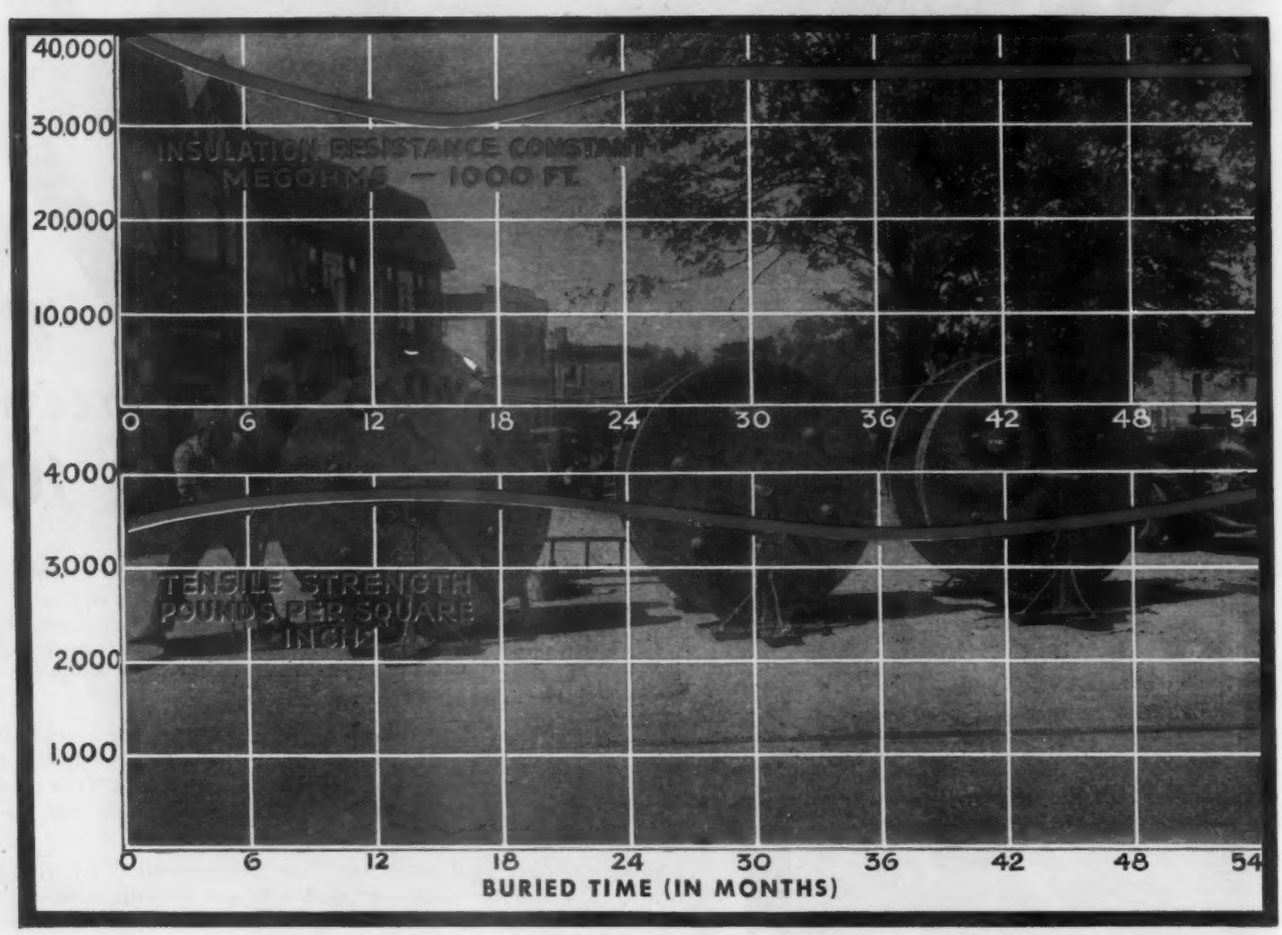
Every CUSTOMER WANTS NOFUZE CONVENIENCE

Now THEY CAN AFFORD IT . . .

Westinghouse

NOFUZE CIRCUIT PROTECTION

OKOSHEATH A NON-METALLIC SHEATHED CABLE



The excellent moisture resistance of Okosheath cable is shown by the above curves. These show the results obtained on a length of standard, single conductor No. 4/0 A. W. G., 600 volt Okosheath cable which has been buried in *wet ground* for five years. It was removed periodically and tested after twelve hours' immersion in water.

Mark the extreme simplicity of Okosheath cable. Just a tough rubber belt around the conductor. That is Okosheath. Simple in design—but it *lasts.*

There is nothing to deteriorate and rot away. Enormous quantities of Okosheath, used both in conduit and buried directly in the ground, have demonstrated its durability. The Okosheath Service Record: *No complaints, no failures.*

Okosheath is effectually moisture resistant. It is clean, smooth, flexible, light in weight, small in diameter; easy to handle and install. A lineman can splice it. Tough and compact, Okosheath is just the cable for the tough pulls.

Okosheath opens the way for the new trends and demands. Besides lower first cost, it saves in maintenance. The dollar benefits are *both* ways.

Note: The above chart appears in our latest booklet on Okosheath, which will be mailed upon request.

THE OKONITE COMPANY
Founded 1878
and
HAZARD INSULATED WIRE WORKS DIVISION

THE OKONITE-CALLENDER CABLE COMPANY, INC.

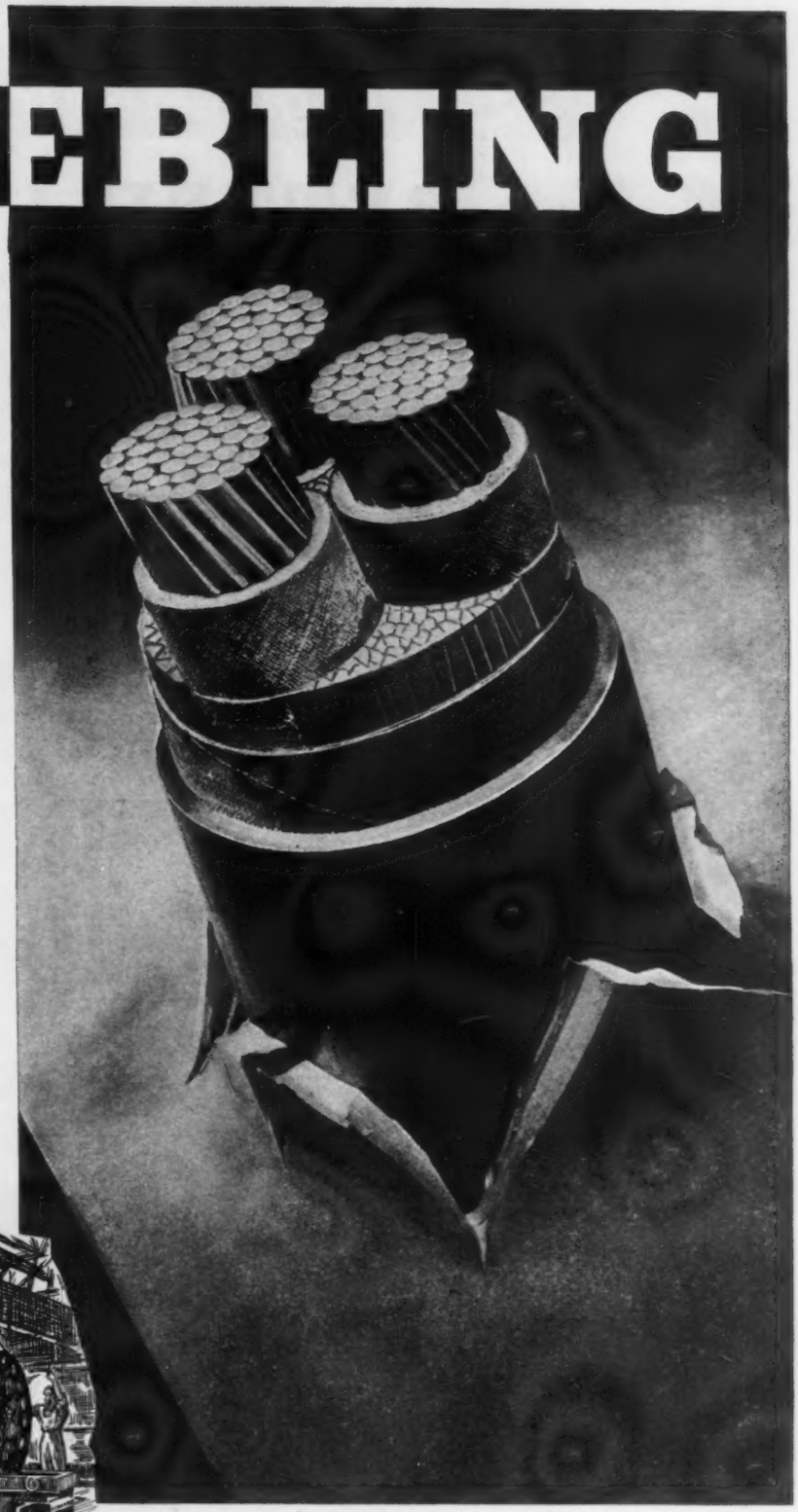
EXECUTIVE OFFICE: PASSAIC, N. J.

New York · Boston · Chicago · Detroit
Philadelphia · Pittsburgh · Washington · San Francisco
Los Angeles · Seattle · Buffalo · Dallas · Atlanta
Factories: Passaic, N. J. · Wilkes-Barre, Pa. · Paterson, N. J.

OKONITE QUALITY CANNOT BE WRITTEN INTO A SPECIFICATION

ROEBLING

Rubber Insulated CABLES



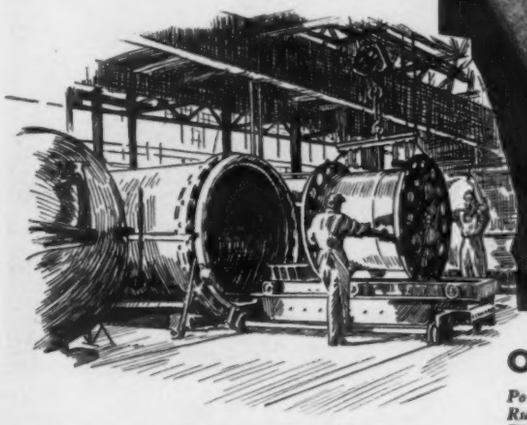
This three conductor, stranded, rubber insulated power cable shown is but one of the complete line of Roebling rubber-insulated Wires and Cables.

These cables are made to exacting specifications, for requirements of power transmission, lighting and signal service—underground, submarine or aerial. Available in a wide range of sizes and voltages. Armors: steel, zinc or bronze tape; or round steel wire.

The complete line includes:—Plain Rubber 60% Sheath Power Cable. "SAFECOTE" Rubber-insulated and Braided Wires and Cables: Code, Intermediate, 30% and 40% Performance, 35% and 40% Performite. 40% and 60% Sheath Flexible Cords. Parkway, Service, Mining, Welding, and Control Cables; Tree Wire.

JOHN A. ROEBLING'S SONS CO.

San Francisco, Seattle, Los Angeles, Portland



Sketch of a vulcanizing operation at Roebling, one of many closely controlled processes in the making of high quality Roebling Rubber Insulated Cables.

OVER 60 OTHER TYPES

Power Cables: Paper; Cambric; Rubber » Parkway Cable » Tree Wire » Service Cables » Station Cables » Rubber Covered Control Cables » Rubber Covered Wires and Cables: Code; Intermediate; 30% and 40% Performance; 35% and 40% Performite; Plain Rubber 60% Sheath Power Cable and 40% or 60% Sheath Flexible Cords » Weatherproof Wires and Cables » And many other wires and cables.

TRADE MARK JAR REG. U.S. PAT. OFF.

ONLY A FINE PRODUCT MAY BEAR THE NAME ROEBLING

4 New Lighting Developments Engineered by Benjamin

Making BETTER LIGHT

OF EVER INCREASING IMPORTANCE TO INDUSTRY

Through the constantly widening circle of Benjamin lighting reflectors specifically designed to meet industry's many lighting requirements, Benjamin is playing a leading part in making "Better Light" of ever increasing importance to industry.

Typical of the service Benjamin is rendering industry are the four new lighting units illustrated here. They bring to industry new solutions to lighting problems—show industry the way to improve work standards and cut production costs as well as to provide additional safeguards against accidents and impairment of vision.

So that industry may have a complete insight into the breadth and scope of modern lighting, Benjamin has prepared "A MANUAL OF FACTORY LIGHTING PRACTICE". In this manual are contained the solutions to the 30 most frequently encountered factory lighting problems. A request will bring you a complimentary copy. BENJAMIN ELECTRIC MFG. CO., Des Plaines, Ill.

BENJAMIN TRADE MARK

LIGHTING EQUIPMENT

Distributed Exclusively through Electrical Wholesalers

BENJAMIN
NEW STOCK BIN LITE
1 Deep Reflector directs light to bins near the floor.
2 Deflector directs light upward above cutoff.
3 Aperatures in ends build up light between units.
4 Lamp shielded by reflector reduces glare.
5 White porcelain enamel surface produces diffused light.
6 Choice of hood designs simplifies installation.
NEW 250 WATT MERCURY AND INCANDESCENT LAMP COMBINATION DIFFUSER
Provides a new degree of eye comfort and reduces the fatigue factor in installations requiring high lighting intensities, by the scientific blending of mercury and incandescent light.
BENJAMIN
NEW SKYLIGHT REFLECTOR
A large 28"x36" diffusing unit of low surface brightness for lighting shiny surfaces. Clamps together for multiple mounting. Twin sockets for 15 to 200 watt lamps. Hand hole for relamping.
BENJAMIN
NEW SILVERED LAMP DIFFUSER
Provides complete diffusion of light with no direct glare from lamp filament. Opal glass insert in neck of porcelain enamel steel reflector provides upward illumination thereby reducing contrast.

Benjamin Electric Mfg. Co.,
Des Plaines, Ill.
Send a complimentary copy of
"A MANUAL OF FACTORY LIGHTING PRACTICE"

Name _____

Address _____

City _____ *State* _____

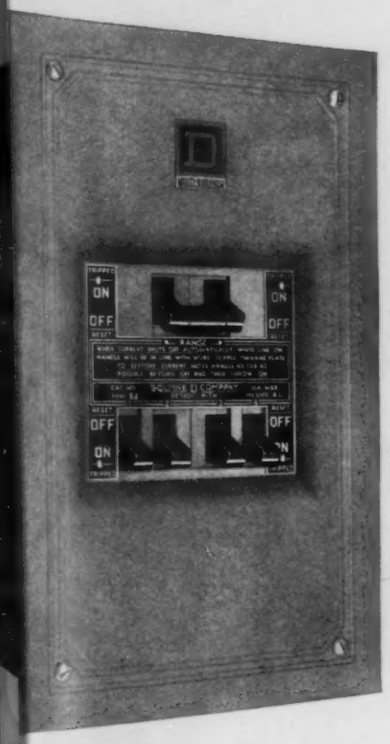
PRINT IN BINDING

Ads and Aids to help you sell the modern convenience of

the SQUARE D MULTI-BREAKER

. . . not only new installations but modernization of present wiring as well

"You will never experience the inconvenience and embarrassment of blown fuses in this modern home"
Successful Realtors will quickly realize the sales advantages of the SQUARE D MULTI-BREAKER
When Submitting the Plans
Specify a SQUARE D MULTI-BREAKE
It's a convenience she'll appreci
SQUARE D COMPANY
"... put a SQUARE D MULTI-BREAKER in that hall —you'll never have to change another fuse"
SQUARE D COMPANY

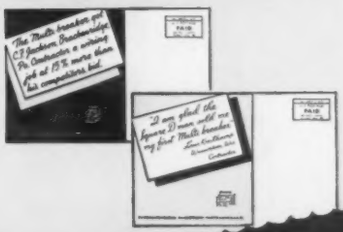


■ **Contractors *are* selling the Square D Multi-breakeR . . . And Square D is doing a big job aiding them!**

Every possible field of influence is being covered. The home owner, the architect, the speculative builder, the power companies . . . all the factors that will help you sell the Square D Multi-breakeR are being reached by Square D advertising.

In addition to this, mailing pieces are reaching you every month which give you all the facts regarding the sale and application of the Square D Multi-breakeR . . . If you are not receiving them, write at once . . . And, are you displaying the attractive window display? . . . If not, ask your wholesaler, or write direct . . . There is big profit in the Square D Multi-breakeR and the wiring jobs it creates.

Square D electrical devices are available through electrical wholesalers everywhere



Over 3,000,000 NEW Homes are needed today!

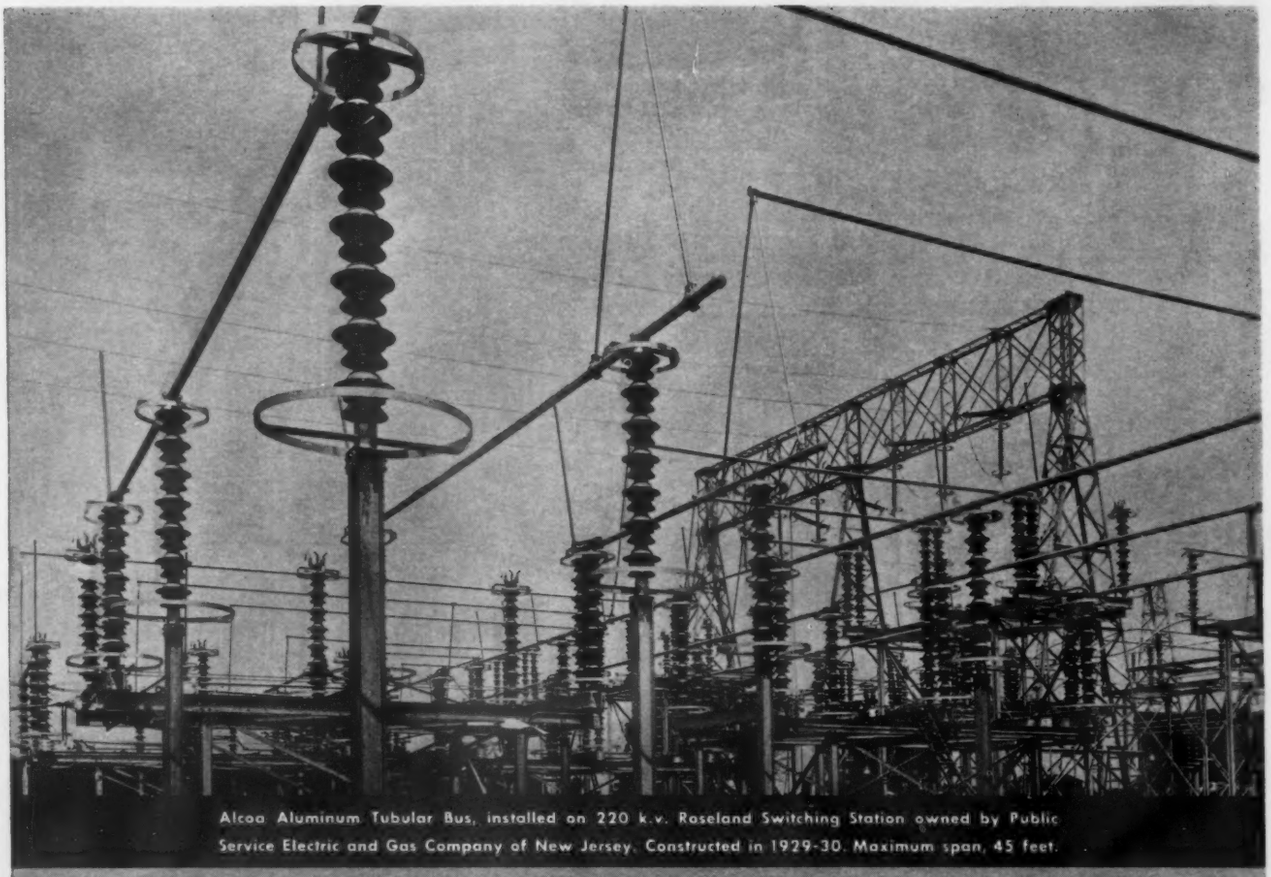
CALL IN A SQUARE D MAN

SQUARE D COMPANY

LOS ANGELES - DETROIT - MILWAUKEE

SQUARE D COMPANY CANADA LTD. TORONTO, ONTARIO

No. 3



Alcoa Aluminum Tubular Bus, installed on 220 k.v. Raseland Switching Station owned by Public Service Electric and Gas Company of New Jersey. Constructed in 1929-30. Maximum span, 45 feet.

ARE YOU PLANNING A HIGH-TENSION LAYOUT?

This picture shows an installation of Alcoa Aluminum Tubular Bus.

It's light!

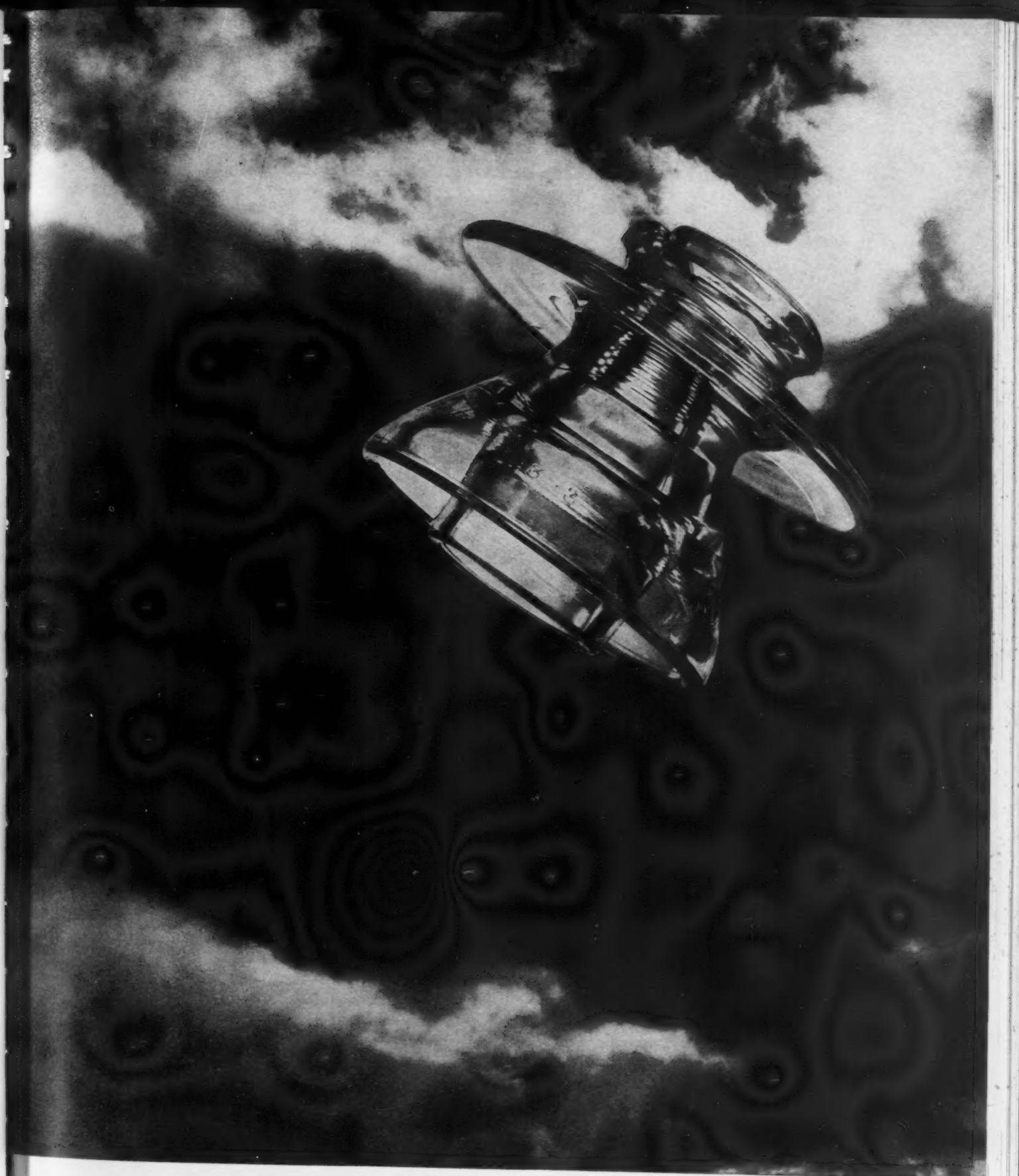
It's stiff!

It stands the weather!

For outdoor layouts of high-tension buses, inherent characteristics of Alcoa Aluminum Tubular Bus aid in obtaining economy and dependability. Lightness and stiffness facilitate design with the clearances required for high-tension work. Resistance to corrosion assures functioning with minimum upkeep.

Complete data on Alcoa Aluminum Tubular Bus, on Alcoa Aluminum Flat Bus, and on Channeluminum, the rolled Aluminum channels which offer the maximum combination of thermal, electrical, and mechanical efficiency for heavy loads, are available. We will be glad to send you this information. Address ALUMINUM COMPANY OF AMERICA, 2132 Gulf Bldg., Pittsburgh, Pa.

ALCOA ALUMINUM



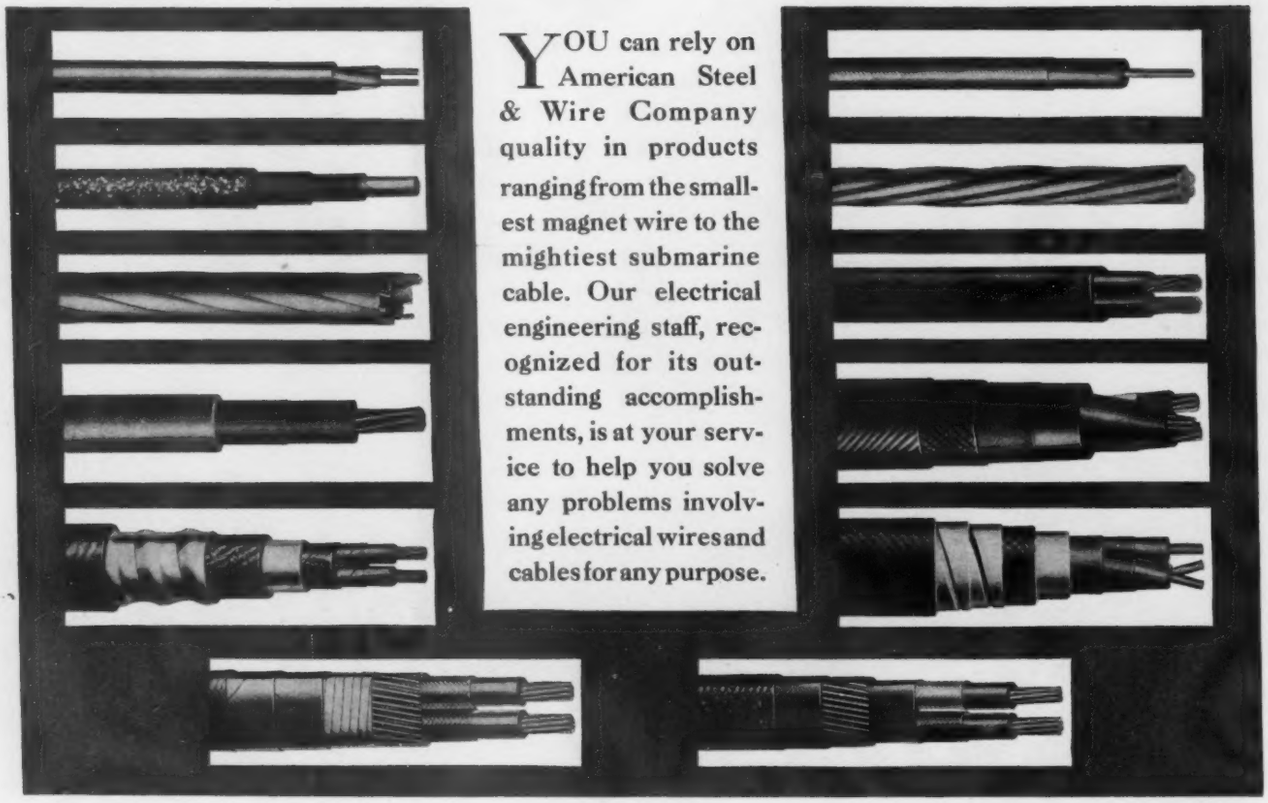
GREATER RESISTANCE TO POWER ARCS... another high spot in

TODAY'S TREND TOWARD PYREX POWER INSULATORS

PYREX is a Trade Mark and indicates manufacture by Corning Glass Works, Corning, N. Y.

A Service and a Product

FOR EVERY USER OF ELECTRICAL WIRES AND CABLES



YOU can rely on American Steel & Wire Company quality in products ranging from the smallest magnet wire to the mightiest submarine cable. Our electrical engineering staff, recognized for its outstanding accomplishments, is at your service to help you solve any problems involving electrical wires and cables for any purpose.

ELECTRICAL WIRES AND CABLES

COLUMBIA STEEL COMPANY · *San Francisco*

Pacific Coast Distributors of Electrical Wires and Cables for American Steel & Wire Company

United States Steel Products Company, New York, *Export Distributors*

UNITED STATES STEEL

WHERE SERVICE CONTINUITY IS VITAL

General Electric Type H rural distribution transformer with pellet-type lightning arrester

YOUR RESPONSIBILITY grows daily as your service is extended to loads where continuity is vital. Dependability of electric service—hence the quality of the equipment you use—was never more important. That is why there is deep significance to you in our rigid policy of building transformers with a "Perfection of Detail" which is reflected for years in almost unbelievably good operating records. General Electric, Schenectady, N. Y.

300-52

GENERAL ELECTRIC

WIREMOLD 4-

ONE STRIP THAT HAS EVERYTHING — DOES VE

A
MULTIPLE OUTLET STRIP
USING NO. 1127 STURDY WIREMOLD OUTLETS ON 3-IN. CENTERS -- OR AT ANY OTHER DESIRED DISTANCES APART
A
A
WINDOW LIGHTING STRIP
USING NOS. 1126, 1126A AND 1126B WIREMOLD SOCKETS OR 1123 AND 1123A SOCKET HOLDERS
A

NO. 1127 WIREMOLD OUTLETS MAY BE INSTALLED SINGLY OR IN GROUPS—AT ANY DISTANCE DESIRED BETWEEN GROUPS OR BETWEEN SINGLE OUTLETS—EITHER ON TOP OF BASEBOARD OR ELSEWHERE AROUND ROOM

WIREMOLD LAMP SOCKETS
1126B
1126
1126A
1100B CHANNEL IS CUT TO FIT OVER ALL SPACE
1100C COVER IS CUT TO FIT SPACES BETWEEN FITTINGS

PRINT IN BINDING

ACE Combination!

VERYTHING — AND PLEASES EVERYBODY!

A ♦

SHOW CASE COVE AND PANEL STRIP

—

USING NOS. 1123, 1123A AND 1124 FOR HOLDING STANDARD SOCKETS OR SPECIAL LIGHTING DEVICES

♦ A

A ♣

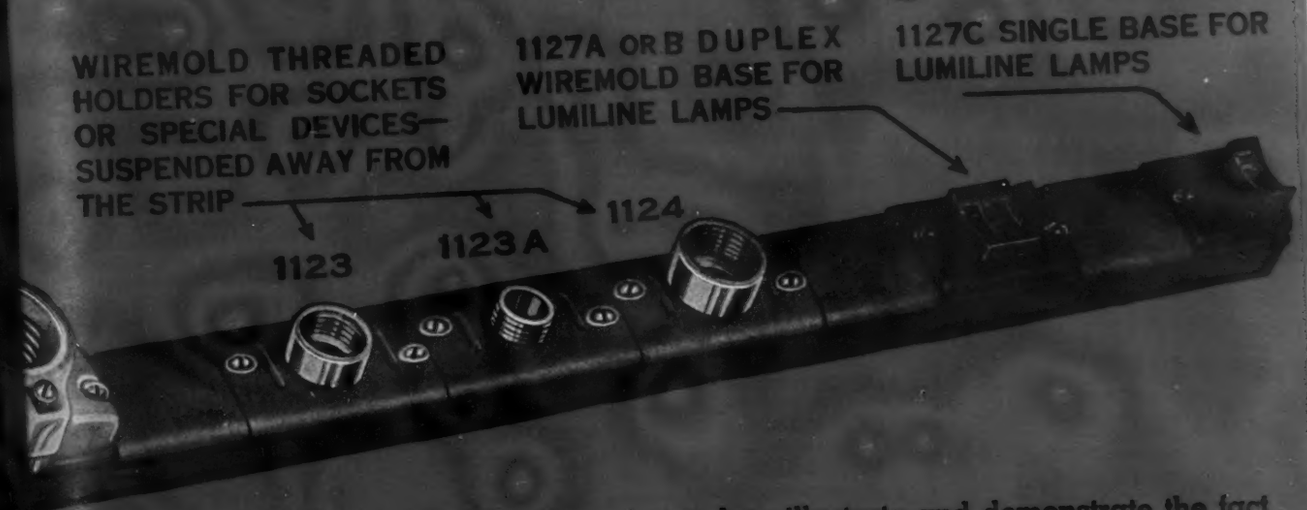
LUMILINE LAMP STRIP

WITH AND WITHOUT WIREMOLD REFLECTOR

—

USING NOS. 1127A 1127B AND 1127C WIREMOLD BASES FOR LUMILINE LAMPS

♣ A


WIREMOLD THREADED HOLDERS FOR SOCKETS OR SPECIAL DEVICES— SUSPENDED AWAY FROM THE STRIP
1127A OR B DUPLEX WIREMOLD BASE FOR LUMILINE LAMPS
1127C SINGLE BASE FOR LUMILINE LAMPS
1123
1123A
1124

This is not an example of actual practice—but it does illustrate and demonstrate the fact that this single strip "does everything"—by use of proper fittings. For further details write to The Wiremold Company, Hartford, Connecticut, or any of the following sales representatives:

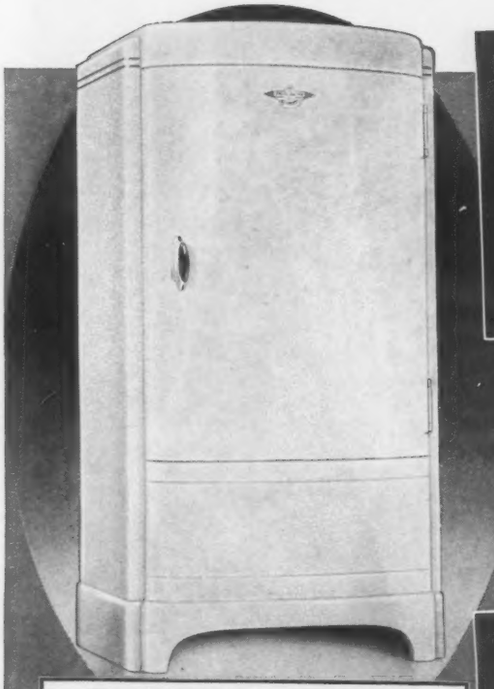
NORTH PACIFIC
F. A. STROHECKER
2007 First Avenue, So., Seattle, Wash.

NORTH CALIFORNIA
GEORGE A. GRAY
1250 Folsom Street, San Francisco, Calif.

SOUTH CALIFORNIA
F. J. AIREY CO.
1955 Industrial Street, Los Angeles, Calif.

OUT TO SMASH RECORDS AGAIN!

Announcing THE NEW *"SUPER-DUTY"* FRIGIDAIRE



...with the NEW INSTANT CUBE-RELEASE

The 1937 sales sensation! Only Frigidaire has it! Instantly releases ice-cubes from trays! Yields 20% more ice by ending melting under faucet! A single demonstration puts Frigidaire 'way out in front for 1937!

...the NEW 9-WAY ADJUSTABLE INTERIOR

STORAGE-ABILITY never known in home refrigeration before! Includes a 2-way Frozen Storage Compartment . . . 2-way Cold Storage Tray . . . 3-way Sliding Shelf . . . 2-way Multi-Storage Section. 9 quick, easy adjustments, with dozens of variations!

... and of course, the METER-MISER

An exclusive Frigidaire advantage with unbeatable sales-closing power! Cuts current cost to the bone! And *proves* it with an actual electric meter test! *The simplest refrigerating mechanism ever built!* Only 3 moving parts, *including* the motor.

The 1937 Frigidaire Line includes

4 De Luxe Models 5.1 to 8.25 cu. ft. sizes
5 Master Models 4.1 to 8.25 cu. ft. sizes
3 Special Models 5.1 to 7.2 cu. ft. sizes
Imperial Model 13½ cu. ft. size
The D3-37—3.1 cu. ft. size

Proves COMPLETENESS NEVER BEFORE KNOWN IN ALL 5 BASIC SERVICES FOR HOME REFRIGERATION

1. **GREATER ICE-ABILITY**
   Ends "Cube-Struggle" and "Ice-Famine"!
2. **GREATER STORAGE-ABILITY**
   New 9-Way Adjustable Interior!
3. **GREATER PROTECT-ABILITY**
   Keeps food safer, fresher, longer!
4. **GREATER DEPEND-ABILITY**
   5-Year Protection Plan, backed by General Motors.
5. **GREATER SAVE-ABILITY**
   ONLY FRIGIDAIRE HAS THE METER-MISER
   Cuts Current Cost to the Bone!

Frigidaire announces a sensational new line . . . and the biggest, most dramatic selling program in its history

● YOU'LL DO STILL BETTER WITH FRIGIDAIRE IN 1937. Because Frigidaire is putting back of its sensational new line the most sweeping, far-reaching Selling Program in its history! Sales strategy which retains everything that shattered all sales records in 1936. Plus *new strategy*—built around "ALL 5 Basic Services for Home Refrigeration." Plus, also, the introduction of the new Instant Cube-Release—greatest improvement ever made in ice convenience! All backed by an even heavier, more concentrated advertising schedule!

Everything about the 1937 program is complete, dramatically presented, sales-compelling in the highest degree. We're all set to go! Watch Frigidaire selling men set the fastest pace on record. They're bound to do *still better* with Frigidaire in '37!

Watch for the smashing announcement ads appearing in 157 newspapers from coast to coast and in all these leading publications, *beginning March 7!*

The Saturday Evening Post
Collier's
Liberty
Time
Cosmopolitan
National Geographic
American Home
Better Homes and Gardens
American Weekly
This Week
Good Housekeeping
Woman's Home Companion
McCall's
Holland's
The Graduate Group
Electricity on the Farm

YOU'LL DO *Still Better* WITH FRIGIDAIRE IN '37!

FRIGIDAIRE

Rural line transformer test. Power are forced against high voltage bushing by the equivalent of a 40-mile-per-hour gale of wind. The bushing was uninjured.

LET WIND *BLOW*... AND LIGHTNING *FLASH!*

MOST TRANSFORMERS can do a fairly good job under normal conditions of operation ... but the test of a REAL transformer is what it does under abnormal conditions.

That is why Allis-Chalmers research and development engineers are constantly devising tests that not only simulate unusual operating conditions but, in many cases, are far more severe.

The net result is a transformer that is outstanding ... a transformer that operates efficiently and economically with minimum maintenance throughout the year.

728

TRANSFORMER DIVISION

ALLIS·CHALMERS

MILWAUKEE WISCONSIN

Again Norge Leads!

. . . WITH A NEW, ULTRA-MODERN ELECTRIC RANGE

. . . again NORGE DEALERS will lead in sales and net profits!

WHEN both product and the plan behind it bear the stamp of Norge, it's good business to swing into the Profit Parade with other Norge dealers.

It is easier to sell the new Norge Electric Range than to sell against it — it has features found on no other electric range — features that clinch sales the minute they are demonstrated.

The Norge 1937 advertising and sales promotion program is the greatest in Norge history. Get full information today. Get the Norge dealership proposition. It's easy to be a Norge dealer, too, because of new liberal finance plans.

NORGE DIVISION Borg-Warner Corporation, 606-670 E. Woodbridge St., Detroit, Michigan

New NORGE LIGHT-SIGNAL TYPE OVEN-CONTROL

Red and green signal lights flash when oven is turned on—green light glows alone when temperature set on control is reached. Only Norge has this feature!

Another Norge Vital Value that sells itself!

See THE DIFFERENCE!

Sell THE DIFFERENCE! *Pocket* THE DIFFERENCE!

BE A NORGE DEALER

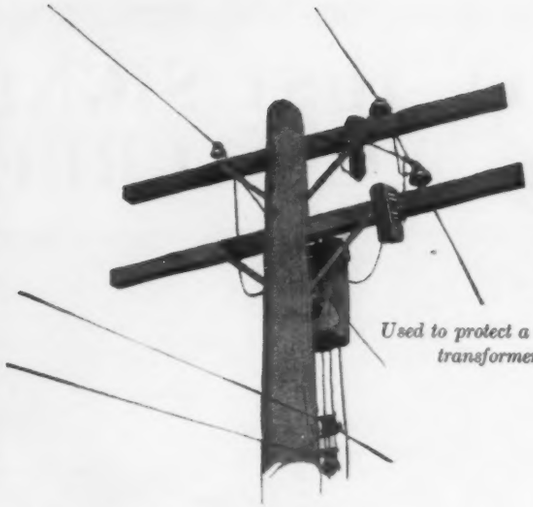
ER-2

ROLLATOR REFRIGERATION (Domestic and Commercial) • GAS AND ELECTRIC RANGES • WASHERS AND IRONERS • WHIRLATOR OIL BURNERS • GAS BURNERS • FINE-AIR FURNACES • COAL STOKERS • AIR CONDITIONING • CIRCULATOR ROOM HEATERS

THERE ARE

Definite Reasons

WHY THERE'S AN INCREASING DEMAND FOR



Used to protect a 6.6 Kv. transformer.

TRIPOMATIC *FUSE* CUTOUTS

Consider these

FEATURES OF THE TRIPOMATIC

SWIVEL HANGER—all round, clamp-type—strengthens the crossarm. Swivel joint permits facing box toward lineman. Hanger bolted to porcelain.

●

UPPER CONTACT—Kearney Point Pressure Type, is combined with latch.

●

LEAD CONNECTIONS—made by clamp-type terminals set in apertures at the back of the box and separated from the cartridge chamber proper.

●

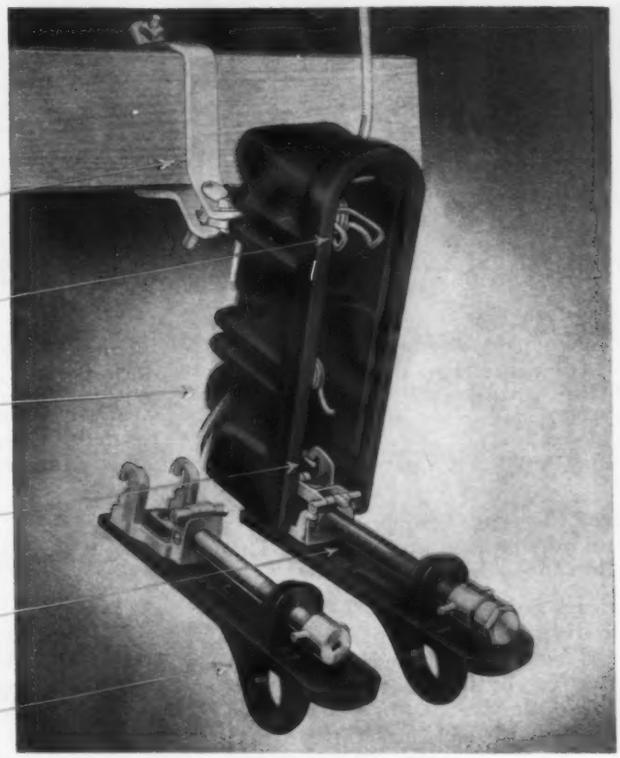
DEAD HINGE—Illustration shows clearance from lower contact. Door is provided with large pull ring.

●

LOWER FUSE TERMINAL—pressure type contact which eliminates use of wing screws.

●

DISCONNECT DOOR—Provided with copper blade—Interchangeable with fuse cartridge door assembly.



SWITCH RATINGS

Tripomatics are available in voltages of 5000 V. and 7500/12500 Y Grd.: Amperages 50 and 100. Disconnect blades—75 and 200 Amp.

SOLDERLESS CON-NEC-TITES
T CON-NEC-TITES
LAP-TITE CONNECTORS
TRIP OUT FUSE SWITCHES
TRIP-O-LINK FUSE SWITCHES
TRIP-SAVER FUSE SWITCHES
ONE AND TWO INSULATOR FUSE AND DISCONNECT SWITCHES
PORCELAIN HOUSED TRIPOMATIC FUSE CUTOUTS
DOUBLE DUTY FUSE CUTOUTS
POLE TOP GANG OPERATED SWITCHES
PORCELAIN HOUSED DISCONNECT SWITCHES
N. E. M. A. HOOK OPERATED DISCONNECT SWITCHES
FUSE LINKS
FUSE LINK BOXES
FUSE PULLERS
SECONDARY FUSES
SCREW ANCHORS
EXPANSION ANCHORS
FULL-VU GUY GUARDS
GUY WIRE CLIPS AND STRAND BANDS
ECONOMY CABLE CLAMPS
DEAD-END SERVICE CLAMPS
V-GROOVE SERVICE CLAMPS
HITEMETERS
"J" HOOKS
CONDUIT STRAPS
ABC SLEEVES AND MACHINES
CABLE RING SADDLES
FIT-RITE WIRE HOLDERS
SLEEVE TWISTERS
GROUND WIRE CLIPS
GROUND CLAMP-TITES
GROUNDING CABLE
HI-LINE TOOLS AND ACCESSORIES
CON-NEC-TAP CLAMPS
GROUNDING SETS
MASTERWRENCHES

KEARNEY PRODUCTS

MAYDWELL AND HARTZELL
INCORPORATED
LOS ANGELES **SAN FRANCISCO**

I'VE JUST SIGNED THE FAN AGREEMENT!

Yes, sir! I've been signing the G-E Fan Agreement for more than thirty years now . . . and I'm proud and happy to sign again for 1937.

Maybe, you wonder why? Well, here's the reason.

The General Electric Company has always given me an *outstanding line* of fans. This year, the line looks better than ever!

They've always *helped me to sell* G-E Fans, with free displays . . . catalogs . . . folders . . . and newspaper advertising. This year they've got the sweetest set-up I've ever seen! And, they've always had a *liberal guarantee*, which protects my fan profits!

That's why, when Jones stopped in and showed me that new G-E portfolio, FAN PROFITS ARE IN THE BAG,* I just said, "Amen, brother," and I signed right on the dotted line.

Yes, sir! The G-E Fan crowd has always treated me right . . . and they're going to get *my* fan business as long as they do!

*WATCH FOR THE MAN WHO CARRIES THIS PORTFOLIO. HE WILL SHOW YOU HOW YOU, TOO, WILL PROFIT WITH G-E FANS.

GENERAL ELECTRIC

FANS

APPLIANCE AND MERCHANDISE DEPARTMENT, GENERAL ELECTRIC COMPANY, BRIDGEPORT, CONNECTICUT

VARNISHED CAMBRIC • RUBBER POWER CABLES • BUILDING WIRE • RADIO WIRES • SIGNAL CABLE • FLEXIBLE CORDS • LEAD ENCASED AND PARKWAY CABLES • ARMORED CABLE • CRESFLEX NON-METALLIC SHEATHED CABLE • SERVICE ENTRANCE CABLE • MAGNET WIRE • BARE WIRE

CRESCENT can meet *all* your wire and cable needs

Reproduction from actual photograph of our factory, at Trenton, N. J.—Fifty years experience.

No matter what are the conditions to be met, no matter what industrial changes occur, the Research, Laboratory and Manufacturing facilities of CRESCENT make it possible for you to depend on this plant for your every requirement in

INSULATED WIRE and CABLE

CRESCENT
INSULATED WIRE & CABLE CO. INC.
TRENTON, NEW JERSEY

WESTERN REPRESENTATIVES

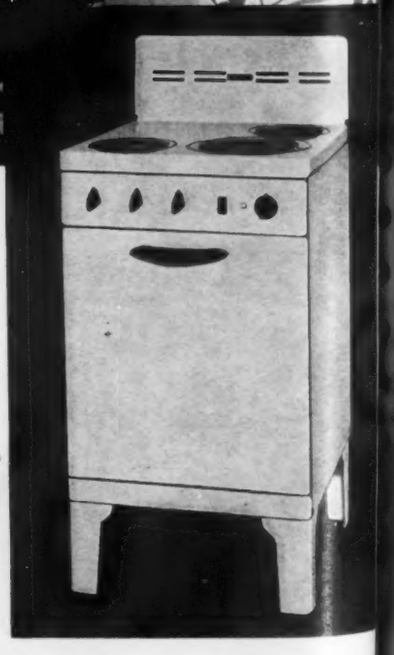
LOS ANGELES
Henger-Seltner Co.
945 E. Pico St.

SAN FRANCISCO
Hodges & Glomb
1264 Folsom St.

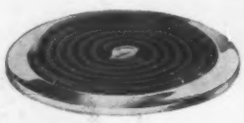
KANSAS CITY, MO.
W. F. Howe,
526 Law Bldg.

CRESCENT ENDURITE SUPER-AGEING INSULATION • WEATHER-PROOF WIRE

Uncle Sam



Public Works Administrator Harold L. Ickes hands government order for 7,802 Hotpoint Electric Ranges to A. D. Byler, Vice-President and General Manager of Hotpoint. The ranges will be used in the government's constructive housing projects.



FLAT *Calrod!*

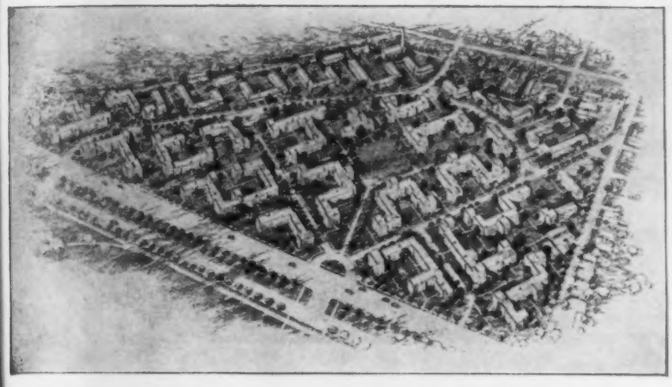
Hotpoint's sensational new Flat Calrod surface units present many times more contact to utensils, provide greater cooking speed with less current. More economical, too; and longer-lived. See Flat Calrod today!

(Right) This range, one of the thousands ordered by the Housing Division of PWA, is the Urbanette, the Hotpoint Electric Range designed and styled specifically for the modern, small apartment Kitchen. Notice its flat, flush sides and back to permit clean and sanitary installation, its modern styling, white porcelain enamel finish, 3 Flat Calrod surface units, and unusually large oven. See it—and you'll learn why this range was the nation's choice!

RIDE WITH Hotpoint IN 1937

CHOOSES HOTPOINT

Government order for 7,802 Calrod equipped ranges awarded to Hotpoint on basis of low operating cost and long life



Old Harbor Village, Boston, Mass., one of the modern projects in the government's constructive slum clearance and low-rent housing program.

THE largest single order for electric ranges ever placed in the United States has been awarded to Hotpoint!

The order is a contract for supplying the amazing total of 7,802 Hotpoint electric ranges for installation in PWA slum clearance and low-rent housing projects in 12 American cities, including Boston, Stamford, New York, Buffalo, Detroit, Philadelphia, Indianapolis, Milwaukee, Nashville, Columbia, S. C., Washington, and Camden, N. J.

DIRECTS NATION'S ATTENTION TO ELECTRIC RANGE

News of the record-breaking order will focus the attention of the entire country on the Hotpoint electric range, and its adaptability to low-cost housing projects where economy of operation and performance are of first consideration.

Hotpoint received the order on the basis of competitive bidding and competitive testing. Only ranges which would give the utmost in speed, economy and durability were considered. The government required ranges which would stand up under hard usage, and which would not be outmoded in a few years.

The high standard of performance of Hotpoint's Flat Calrod Units was one of the chief determining factors in the Housing Division's choice. The new flat surface of Calrod transfers heat to utensils by direct conduction, gives greater cooking speed with less current. Accelerated life tests prove that Flat Calrod lasts longer, wears better.

The approval of the government, as reflected in this order, will be a tremendous stimulus to the already sweeping public preference for the Hotpoint range. Take advantage of this trend. See the new Hotpoint Electric Range, with Flat Calrod Units. Discover to your own satisfaction why the nation's choice is Hotpoint!

EDISON GENERAL ELECTRIC APPLIANCE CO., INC.
5612 West Taylor Street, Chicago, Illinois

THE *Dorchester* IN FULL PORCELAIN ENAMEL

Newest Hotpoint range sensation is The Dorchester in *full porcelain enamel* — first full size, built-to-the-floor model of moderate price. Flat Calrod, Thrift Cooker, Chrome Lamp, Condiment Set, Time Chime Clock and a host of other easy-to-sell features. Ask your Hotpoint distributor or representative for details.

ELECTRIC **Hotpoint** RANGES

THE NAME EVERYBODY KNOWS

FIGURE ON SAVINGS WITH THIS IMPROVED LINE WIRE

Savings in maintenance . . . by lessening the number of interruptions . . . by cutting down on repair bills . . . as well as improving continuity of service. A strong, light, long-life wire, with an improved covering.

1 Copper Conductor

Can be either solid or stranded, soft-, medium- or hard-drawn as service conditions demand. Medium-hard-drawn is standard.

2 Varnished Cloth

Wraps of varnished-cambric tape, of identically the same high quality as used in the construction of G-E varnished-cambric power cable. It does not readily absorb moisture and has high-dielectric-strength and long-life qualities.

3 Weatherproof Finish

Heavy, closely woven braid, treated with high-melting-point U.R.C. Compound. Continued and varied service has proved that it is the most weather-resisting finish of its kind. Further protected by mica dust, which prevents layers of wire from sticking when coiled and provides a smooth surface that sheds water.

YOU can use this VC line wire for the same applications as ordinary braided weatherproof wire—for overhead distribution, primary and secondary circuits. It is superior in having a higher voltage-test strength, is more effective in preventing arcing if two wires swing together; and is in addition tougher, more weather-resistant, and longer-lived.

You can see how this wire minimizes the possibility of fuse outages and transformer failures; how it reduces impedance and thus improves regulation and enables you to give better service.

VC line wire is available in all standard sizes, from No. 20 Awg to 2,000,000 cir mils—many of which are carried in stock. May we give you prices and further information? Address nearest G-E sales office, or General Electric, Dept. 6C-201, Schenectady, N. Y.

520-108

GENERAL ELECTRIC

ELECTRICAL WEST

DEVOTED TO THE ECONOMIC PRODUCTION, TRANSMISSION AND DISTRIBUTION OF ELECTRIC POWER AND ITS APPLICATION TO INDUSTRY, COMMERCE, AGRICULTURE AND HOME IN THE PACIFIC EMPIRE, AND TO THE MARKETING OF EQUIPMENT AND APPLIANCES AND OTHER UTILIZATION DEVICES IN THAT AREA

March 1937

•

Power and the Press

THE private power industry is viewed favorably by the newspaper profession in the smaller towns of the country if the results of a survey conducted by the publishers of the Industrial News Review, Portland, Ore., is to be credited with representing a cross-section of the opinion of the editors of these newspapers. A large majority of the editors replying in this survey did not favor municipal ownership; thought that federal electric developments were not justified as a national necessity; were satisfied that the electric industry is giving good service; believed that government or municipal ownership would not give more progressive, more efficient and cheaper service when tax exemption and tax subsidization of government projects were taken into consideration; and declared themselves against dealing out the wholesale "death sentence" to holding companies. A smaller majority expressed confidence in state regulation, saying it had not been a failure.

Publishers of Industrial News Review, E. Hofer & Sons, have been sending weekly editorial comment on fundamental economic questions pertaining to industrial development, investment, finance, employment, wages and taxation to country newspapers for over 25 years. Their present mailing list numbers 12,500, scattered over every state. Among the questions discussed from time to time in these weekly releases has been the power issue.

Simple questionnaires of six questions answerable by "yes" or "no" were sent to this mailing list with a request for a reply but without any special appeal or inducement. Thirteen hundred sixteen replies, 10½ per cent, were promptly received and no follow up effort was applied to increase the returns. Two hundred twenty-two of these replies came from newspaper editors in the 11 Western states, and a tabulation and analysis of these is presented herewith.

Trend of the answers from the 11 Western states followed quite closely

Editors Speak

Questions		Percentages Answering Nationally	Eleven Western States
1. Do you favor municipal ownership?	No	75.6	84.0
2. Do you think federal electric developments justified as a national necessity?	No	79.5	80.0
3. Do you think state regulation has been a failure?	No	58.0	59.0
4. Do you think the electric industry is giving good service?	Yes	96.7	98.5
5. Do you believe that government or municipal ownership of the industry would give more progressive, more efficient or cheaper service—tax exemption and tax subsidization of government projects being taken into consideration?	No	86.4	88.5
6. Are you favorable to the wholesale "death sentence" for holding companies?	No	81.3	80.8

the national trend of these answers, but in general were more strongly favorable to the industry than the national returns.

Replies on both sides of each question by states are given in the accompanying table. Of particular interest in a region having the largest municipal ownership enterprises in the country is the large vote unfavorable to this system for furnishing power to the people. Even in California and Washington, the home of these enterprises, the vote is substantially unfavorable to them. Another surprising result of the poll is the return on questions 2 and 5, having to do with federal development. Here again, in the states of California, Washington and Oregon, presumed to be in line for benefits from these developments not possible under private ownership, the editors do not believe that federal power development is justified as a national necessity, nor do they believe the region would be any better off as to rates and quality of service from these federal developments when tax exemption and tax subsidization are taken into consideration. The confidence in state regulation expressed by the editors is likewise somewhat surprising, considering the amount of propaganda, to the effect that state regulation has failed, that has been issued by demagogues seeking absolute federal regulation or actual destruction of the industry as a private enterprise.

What Editors Say About Electric Power

State	Number of Replies	No. 1 Yes	No. 1 No	No. 2 Yes	No. 2 No	No. 3 Yes	No. 3 No	No. 4 Yes	No. 4 No	No. 5 Yes	No. 5 No	No. 6 Yes	No. 6 No
Arizona	6	3	3	4	2	6	0	6	0	3	3	3	3
California	66	5	56	9	51	21	33	61	1	2	56	9	47
Colorado	25	3	22	3	21	9	12	24	0	2	21	4	19
Idaho	18	1	16	2	16	4	14	16	1	1	17	1	15
Montana	12	5	7	4	8	5	7	10	0	5	7	2	9
Nevada	3	0	3	1	2	1	2	3	0	0	3	0	3
New Mexico	7	1	5	1	4	2	0	5	0	1	5	0	5
Oregon	34	4	30	7	27	11	18	33	1	2	30	8	23
Utah	5	0	5	1	4	2	1	5	0	0	5	2	3
Washington	38	9	29	9	29	11	23	36	0	6	31	8	23
Wyoming	8	3	4	1	6	6	2	6	0	2	5	0	6
Totals	222	34	180	42	170	78	112	205	3	24	183	37	156
Total U. S.	1,316	307	957	267	1,105	477	633	1,219	41	168	1,040	224	977

Cooperation on Parade

OUTSTANDING ACTIVITIES OF THE RECENT PAST AND FUTURE WHICH CONSTITUTE A SUMMARY OF COOPERATIVE MERCHANDISING IN THE WEST

Appliance dinner celebrities — Left to right: Larry Quimby, chairman; Al Rice, the ever active master of ceremonies; Lee McCanne, telling of television; seated near him, Attorney Weigel; while Hugh Crawford introduces, the seated James Pollard prepares the gas range attack on the market

Seven Entertainment Services for Every Home Predicted

WITH a larger attendance and an increased volume of business signed by all exhibitors, the Western Furniture Exchange spring market, Feb. 1 to 6, closed that Exchange's last exhibit at its old building.

An appliance and radio trade dinner on Monday, Feb. 3, highspotted the week for appliance interest. Larry B. Quimby, chairman of the Radio & Appliance Buyers Advisory Board, was chairman of the dinner-meeting. Al Rice, district manager, Kelvinator Corp., was toastmaster.

The sole electrical subject of the dinner was presented by Lee McCanne, general sales manager, Stromberg-Carlson Telephone Manufacturing Co. of Rochester, N. Y. Mr. McCanne analyzed radio from the standpoint of its profit to the electrical industry and to dealers. To the utilities, he pointed out its good loadbuilding characteristics. To the dealer he showed that the salesman of a substantial console type radio gained much more profit than from the sale of a number of inferior models. Speaking of trends in radio, he predicted that this would be a furniture year in radio sets. Technical perfection has been achieved and the public now asks more how it looks, if the set performs satisfactorily. That there will be less chassis styles and more cabinet varieties, he also foresaw.

Three things will keep radio development going, he predicted. One, is the coming of high fidelity transmission equipment which will require high fidelity reception. The public, he said, is becoming more conscious of such fidelity. Second, he said, is high power. There are now two half-million-watt stations on the coast and more in prospect. Those who live near such stations find present sets completely unsatisfactory and require new sets which can handle the interference from such high powered stations. Third, will be ultra short-wave broadcasting of all local regional material off the main broadcasting bands. This will require sets equipped to handle such short wave broadcasting since the stations will be "lighthouses" and those within "view" will find new reliability and lack of fading or static in such transmission.

Speaking of television he said that in the near future seven electrical entertainment services will be provided in the home: (1) radio, (2) phonograph, (3) electric organ or electric musical instruments, (4) talking book, either on cellophane or on magnetized iron wire, (5) television, (6) home talking movies and (7) home talkie movie camera. He then told of the problems confronting successful television. These are: (1) the numerous "lighthouses" or transmission stations necessary, (2) the coaxial cable installation throughout the country to carry the broadcasts, (3) the problem of providing sufficient programs and costumes for continuous broadcast, (4) the sponsorship of such television and (5) the necessity for concentration of attention on the part of the recipient in the home.

Other speakers at the dinner included Hugh Crawford, general sales manager, Pacific Gas and Electric Co., who introduced James F. Pollard, president, Seattle Lighting Co. Mr. Pollard talked on the national gas range advertising program. The final speaker was Stanley A. Weigel, attorney, who spoke on the Robinson-Patman and California Fair Trade acts. Arrangements for the dinner had been made by George L'Amoreaux, in charge of the appliance division of the Western Furniture Exchange.

●

HOME APPLIANCES will receive their seventh annual exhibit in Oakland under sponsorship of the *Post Enquirer*, March 25 to 29. As in the past, the event will feature radio and theatrical talent. A three-day cooking school will be conducted. To qualify for booth space, firms must use a specific amount of advertising in the paper's home appliance section.

●

BARKERS FURNITURE CO., Fresno, Calif., recently had a very successful showing of a model electric home. Mr. Barkers' contention is that the home is the center of cultural advantages and should be well built, and well furnished. To set such an example, he built a home and had it opened for public display. The kitchen was equipped with electric range, dishwasher and refrigerator and the laundry with washer and ironer.

●

HUMIDISTAT — Seeking the equivalent in air conditioning to the sight-meter for lighting, Public Service Co. of Colorado in its campaign to sell winter air conditioning is trying the humidistat as the nearest approach to a measuring stick for air conditioning comfort. In the Rocky Mountain region during winter the problem of supplying enough humidity is the chief one.

Sky is Only Limit to Light for Seeing

"ALL the ills of civilization are ills of ignorance," and a scientific, painstaking, and thorough inquiry into realms just beyond the obvious is the cure for ignorance. This was the philosophy which Matthew Luckiesh, director of the lighting research laboratory, General Electric Co., Nela Park, Cleveland, gave to a number of Western audiences which he addressed on a brief tour of the Pacific Coast. Foremost scientist in the study of seeing, in all of its physical and therapeutic ramifications, Mr. Luckiesh's witty and interesting discourses were received enthusiastically by large audiences in Seattle, Portland, San Francisco, Fresno and Los Angeles. In Fresno he addressed the convention of the Optometrical Society and in San Francisco spent a half day with the highway division of the State of California discussing highway lighting problems. A large public meeting to which teachers, school authorities, oculists, optometrists, and the electrical industry were invited, was sponsored by the Sight Conservation Council of Northern California and held at International House on the University of California campus.

Beginning with the idea that civilization seemed to introduce new plagues for those which it eliminates, he pointed out that the aim of civilization was to bring order out of chaos. Knowledge of the details of chaos seems to eliminate its chaotic nature. The scientific method of attack is an experimental one, he said. It is characterized by protection from prejudices or preconceived notions and by a systematic and thorough investigation of all phases of the subject. The importance of such research he made very emphatic. His own company, he said, had spent a million dollars under his direction over a period of years just to help determine what lighting does for the human race.

In an age of prevention rather than cure the concept that light is only a means toward the ultimate aim to see came late, and is only now beginning to be recognized. This concept is new to the medical profession as well as to the lighting profession, he pointed out.

After complimenting the medical profession for its high standards of ethics and its use of scientific knowledge he challenged it to widen its horizon in the matter of seeing. The medical man must not be content merely to provide glasses for correction of visual defects—he must take the responsibility of making seeing as easy and complete as possible for his patients. This will require a study of light and its applications.

Dr. Matthew Luckiesh
"Seeing" order out of "Light" chaos

The electrical industry and the illuminating engineers, he pointed out, had been even worse rut-bound than the scientific medical profession. It too needs to raise its horizon to the entire concept of *seeing* rather than merely providing wire and lighting equipment. "What light will do for people" should be the criterion.

Man is a seeing machine, he emphasized, using light and vision by which to see. In this process he uses his nerves, bodily energy and probably a good many other factors besides his eyes. Relating the results of tests on a large number of subjects over a long period of time, indications were that 500 foot-candles is a level of illumination which requires the least output of human energy by which to see ordinary reading material. One must hesitate to prescribe standards, he said, but with an optimum of about 500 foot-candles, improvement of lighting by any smaller proportion of that amount must always be considered a step toward a decent standard. Former medical and other standards have been used, he said, upon the very minimum by which the eyes can be expected to see.

He ended by declaring that naturally any improvement may involve sale of equipment or services, yet he knew of no other way in which it could be done. This in itself did not necessarily characterize improvement as commercial. Commercial or not, the service which it would perform for humanity was paramount to any narrow prejudiced view against someone making some money out of improved lighting and seeing conditions.

In Portland Dr. Luckiesh addressed a large meeting at the Multnomah Hotel. In Los Angeles a similar meeting, sponsored by the Western Institute of Light & Vision, was held in the Edison Co. auditorium.

Sales Shows—How the Manufacturers Announced 1937 Line Features

BECAUSE they indicate sales appeals, measure sales opportunities, and create selling enthusiasm—without which there are no results—the sales showings of the various refrigerator and range manufacturers are a yearly source of inspiration. And this year was no exception to the rule. If the enthusiasm, the faith (as expressed in heavier quotas) and the technique are any sign of good times, then 1937 promises every dealer and salesman exceptional opportunities, with improved merchandise and exceptionally strong advertising support. In fact, if there is anything significant in the picture it is that the race for gadgets has about reached its top; that every manufacturer realizes that if his product is to be sold he must hit harder and oftener with the services which his product will perform in bringing convenience, health, happiness, safety, and pride to the American home. (New features are high-spotted in the New Products section of this number, pages 66-70.) Briefly reviewed are the major presentations here in the West—those attended by Electrical West editors, or reported from interviews with western representatives.

Stewart-Warner Shown Early to Dealers

First among refrigerator manufacturers to present 1937 models in dealer shows this year was Stewart-Warner. Instead of waiting until January and February showings, customary during the past few years, gave way to Stewart-Warner sales meetings in November and December. Other refrigerator manufacturers are also said to be planning earlier presentations.

Typical Stewart-Warner presentation was that of the Moore Electric Supply Co., San Francisco, in presenting the line to northern California dealers. Charles E. Moore personally attended the meetings in San Francisco, Fresno and Sacramento. Others on the pro-

Candid highlights of the Frigidaire show: Top, R. G. Hutchison reading President Beichler's greeting and challenge. Right: booming guns of "proof" in the spectacular opening. Below (in the same order): C. J. Allen dramatizing "save-ability" "Dealer" Weisenbarger riding the high waves before "banker" J. H. Walker (crew leader). Allen demonstrating the instant cube release. E. L. Williams explains the new line. "Utopia", the salesman's dream. "Dealer" Hanf gives ex-Salesman Williams "An Awakening".

gram were R. J. Lawrence and T. J. Tobin. P. E. Dietz, of the Commercial Investment Trust Co., spoke of the financing opportunities under the four plans offered by this manufacturer. First is a "no recourse plan," second is a limited recourse plan for dealers in outlying territories, the limit being three months, third is a flooring plan which places merchandise on the dealer floor for display purposes, and the last was a Christmas plan allowing the purchaser, after a down payment, four months without another payment on the refrigerator.

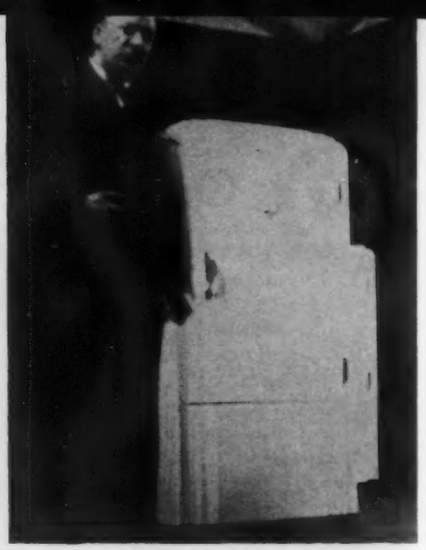
The refrigerator features this year include 16-point cold control with an illuminated dial, a reversible door on the freezing compartment. Its "save-a-step" feature is improved and there is a solid bottom shelf over the vegetable crisper drawer to provide a type of air conditioning for such storage.

Frigidaire Show Continues to be "the Tops"

UP in Portland lives a showman named "Army" Ambrose, who though in the wool business now, is a recent alumnus of Frigidaire. Fortunately he still journeys back to Dayton each Fall and writes a new show. Whether it is because Frigidaire has people who know how and do put together as snappy a sales show as ever Broadway offered in theatricals, or whether this organization is more adventurous in the field of showmanship as an adjunct to sales, does not matter. The result is a show that definitely focuses the eyes of dealers and salesmen on its selling program, drums into their subconscious its selling slogans and method, and very evidently places it up in the top brackets in sales.

J. H. Walker, manager of the utilities division, led the crew of 11 who toured the West with the show, included among which were E. L. Williams, Pacific division regional household sales manager, (and more of an actor than one would suspect) and F. W. Beecher, now in charge of air conditioning sales for this region.

Significantly too, though Frigidaire made a number of important detail improvements in its product and introduced a new automatic ice cube release in all trays and all models, its story this year is sounder and stronger than for some time. Boiled down to five catchy wordings, it puts the full weight of its advertising and its sales talk into five basic services to the customer, rather than becoming overawed by the mechanical details of its product. These "five basic services" are emphasized as "greater protect-ability, ice-ability, storage-ability, depend-ability, and save-ability." Then, logically, the devices or features which make these services possible are catalogued as proof that it can deliver such services — by far the strongest sales presentation method. It was a relief to hear refrigeration talked in terms of the user; to hear less booming of manufacturer "dominance," "leadership," and other egoistic bragging. And the show lost none of its pace, its drive, because of this new point of focus—the customer.



T. J. Tobin told about the "Save-a-Step" feature in Stewart-Warners

Spectacular, as always, was the opener—a series of fast action scenes and talks made possible by electrically recorded sound and the ingenious use of revolving stage, properties on movable dollies, and big splashy scenic effects. These dramatized the Frigidaire ads to the trade, "You'll do still better with Frigidaire in 1937" with booming guns, etc. Then came a series of scenes to depict improvements and changes in the 1937 models—the dial type temperature indicator mounted on the outside, above the refrigerator door; the ingenious way in which foods and containers of various sizes and shapes can be stored on the nine-way adjustable shelf arrangement.

Short skits illustrated the transition from chipping ice off a block of ice in the old ice box through the various cube melting ways of extracting ice cubes, to the latest innovation, an automatic ice cube release, this year's chief gadget. Then came the spectacular parade of new models, with the revolving stage going full tilt.

Except for Denver, R. G. Hutchison, Pacific regional manager, accompanied the show to each of its western showings. Hosts for the Dayton troupe and for the hundreds of dealers and salesmen from surrounding territory were: E. D. Davis, manager Denver district, Frigidaire Division, General Motors Sales Corp.; C. C. Bintz, of W. H. Bintz Co., Salt Lake City distributors; T. J. McIntire, manager Los Angeles

district, Frigidaire; R. E. Robinson, manager Oakland district, Frigidaire (San Francisco show); A. L. Shellworth, Sunset Electric Co., Portland, and J. W. Condon Jr., same company, Seattle; and Alvin M. Jensen, Jensen-Byrd Co., Spokane, distributors.

In Portland Mr. Hutchison congratulated the Sunset organization for topping every Frigidaire distribution zone in the U. S., with an increase of 90.2 per cent over 1935. R. R. McIntyre is sales manager of the Frigidaire division for Sunset Electric in Portland.

●

Westinghouse Show "Going Places in 1937"

RAY C. COSGROVE, manager of refrigerator sales, Westinghouse Electric & Manufacturing Co., Mansfield, led the troupe which told its dealers and distributors throughout the west that "Westinghouse is going places in 1937." More than just a refrigerator show, Westinghouse embraced ranges, water heaters, refrigerators, and the all-electric kitchen in a high class and exceptionally well presented show, occupying an afternoon and evening. Colorful, snappy, well organized, it swung from feature to feature to prove its product and sales story sound and dynamic for 1937. Central theme was a nation-wide customer survey on ranges, and a world wide series of tests of its refrigerator in some of the world's worst climates.

Beside Mr. Cosgrove and Fred Hout, of Mansfield, the troupe enlisted A. B. Murphy, sales promotion manager, M. S. Henoch, range sales supervisor, and J. G. Miles, merchandise sales supervisor, all of San Francisco. The show skipped southern California, where Westinghouse Supply Corp. arranged small individual showings of the new products for 1937 in its various communities. It did play San Francisco, Stockton, Fresno, Reno, Medford, Portland, Seattle, Spokane, Salt Lake, Butte, and Denver.

Customer comments will be quoted in the company's range ads this year. And the program calls for a bigger advertising appropriation than ever.

Completeness of the new water heater line was emphasized in a short presentation, which set forth "100 per cent continuous water heater service," trouble freedom, and safety, as the big appeals. The new baby 1-gal. water heater was shown to have a wide market in offices, service stations, doctors or dentists offices, etc.; that it would provide an ideal way to demonstrate water heating because it can be carried easily, connected by means of a hose, tapped to any convenience outlet. Other versatility and economy features of the new water heaters were shown. A new cutaway model water heater display, with neon tubes representing the Corox element, was shown for the first time, as well as a new range display model, and a spectacular display to show the new four-heat "economizer" range unit.

Two dominant themes will characterize the Westinghouse refrigerator sales story this year. The first is that Uncle Sam has selected Westinghouse refrigerators even over lower priced makes for his big order for slum clearance projects, selected them on a basis of guaranteed low operating cost for 10 years. This government approval will splash forth in every ad and sales presentation.

Second strong proving point will be the figures derived from placing refrigerators in kitchens all over the world and in some of the world's worst climates, such as near the equator in Brazil, and in each recording hourly the inside and outside temperatures and humidities, the current consumption and length of time of compressor operation. "Kitchen proved" will be the battle cry.

Spectacular dealer store demonstration being offered is "Hell's Kitchen," consisting of a tropical background, a little grass hut with a refrigerator inside filled with food. Heating lamps pour a stream of heat upon the refrigerator. Prospects can open a peep hole door, stick their hands or heads inside and feel the heat; open the refrigerator door, note the coolness.

Top, Fred Hout, of Mansfield, illustrates the "economizer" story, as he reveals the 1937 range's new features. At the San Francisco showing, J. T. Templeton, Colvin-Templeton Co., was host to dealers and to Ray Cosgrove, manager of the refrigeration department, Mansfield; Charles Meier, Pacific Coast merchandise manager; Ed Lachman, Lachman Bros. A. B. Murphy, sale promoter, displayed the colorful "Hell's Kitchen". Bottom, the full Westinghouse kitchen

●

G. E. Refrigerators Come by Trainload

NOT the showing, but the results thereof, were spectacular as far as General Electric ranges and refrigerators were concerned. The showings took the form of previews to groups of 12 to 15 dealers at a time in all of the new distributor setups for General Electric appliances. Because the San Francisco preview resulted in one order of 53 full carloads of ranges and refrigerators, made up of full and split carload orders from northern California dealers of General Electric Supply Corp. the largest single order ever filled by G. E. and the biggest ever to go to California, in the dead of the coldest winter on record, attention naturally centers on how this was done.

It is a story less of spectacular showmanship than of complete organization and thorough coverage of all the opportunities. George A. Lloyd, kitchen appliance sales manager, after his success with the 1936 preview, carefully planned the 1937 affair with an eye to obtaining 35 carloads of orders. In 1936 dealers had liked the idea of moving many refrigerators ahead of the regular selling season. That Mr. Lloyd turned the figures around, with orders for 53 instead of 35, was a great satisfaction and accomplishment.

Briefly, wholesale managers thoroughly canvassed the territory, both checking into the potentials of old dealers and surveying prospects for new dealerships. They checked credits, contacted and gave a preliminary outline of 1937 plans to these dealers, and arranged for their attendance to the preview in San Francisco, in December.

Previews then were set up on a five day program; the first two days for present dealers, the third for metropoli-

Through the snow-covered Sierra came the 53 carload train of G. E. refrigerators for the northern California market. Center, general staff which planned the big sale—E. M. Frellson, H. C. Falkell, Russell Grosjean, W. E. Landmesser, C. W. Hartenfels, George Ruck, Charles Goodwin, Jr., R. R. Rimbach, and George S. West, standing, and Dave E. Harris, with George A. Lloyd, seated

tan department stores, and the fourth and fifth for prospective dealers. Seven rooms were arranged so as to present the entire line in sequence.

Net returns were 26 new dealers, 2,155 refrigerators and other appliances, in full and split carload lots, plus 700 refrigerators for LCL shipment, plus signs, advertising material, etc. Then in a follow up of the entire territory, the total of new dealers was raised to 50.

To capitalize on this record shipment a territory-wide promotion was planned.

Details of the previews in other centers are not available, but the procedure with other distribution organizations was carried along very much in the same manner. Portland and Los Angeles too, sold complete trainloads of refrigerators and other appliances for an early start in the 1937 season.

●

Kelvin Home Is Focus of Kelvinator Ambition

WITH air conditioning advancing in rapid strides, Kelvinator this year turns its eyes to the ideal, modest home, complete in electrical equipment and air conditioned. The vision of such homes has been set up before the headquarters staffs of all regional sales organizations, and the aim is to have several Kelvin homes built in the West during the next year, according to J. L. Conover, regional manager.

But while the goal is the complete home, built to specifications which include heat and cold insulation, Kelvinator is all set to sell plenty of existing homes new refrigerators, washers, ironers, ranges, and water heaters. The complete line was first shown distributors at a convention in Detroit, and then these distributors in the West held individual showings for their dealers.

Listenwalter & Gough, in Los Angeles, held sales conventions for a week at the Biltmore hotel, chairmanned by H. B. Harris, manager of domestic refrigerations department, in charge, and R. A. Redish, salesmanager, assisting.

In San Francisco the H. R. Basford Co., under George P. Eggleston, held individual showings for its dealers, a few at a time and progressively for a period of a month. These were held in its own showrooms. In Portland, the Powers Furniture Co., with A. T. Erickson, manager of the Kelvinator distributorship, staged similar showings for its dealers. Salt Lake City's Flint Distributing Co., held similar showings, with Leon Flint in charge. In San Diego, Standard Electric Co., under Leonard Harris and R. E. Harris, held small dealer showings. In Phoenix it was the Electric Equipment Co., in charge of Sam Kahan, with A. L. Jennings and Leon Black assisting him. Seattle showing was made by Graybar Electric Co., distributors for that region. F. P. Brien is refrigerator department manager there. In Spokane, Tull & Gibbs, long Kelvinator distributors on a large scale, again handled the showings to regional dealers, under the supervision of L. K. Vallandingham, manager of the appliance department.

●

Norge Ranges Actively Enter Western Market

ADDED to its "Low-Temp" line of refrigerators for 1937, Norge has really plunged into the electric range field with both feet. Last year, and the year before, Norge had electric ranges —first the Detroit Star, and then a Norge. But its chief emphasis was on its gas range line, aside from the promotion of its eminently successful Rollator refrigerator.

In previewing for its dealers the new 1937 line, Norge followed a procedure similar to that used in the last few years—a number of showings to the dealers within a distribution radius. Hence in California, for example, the Leo J. Meyberg Co., distributors, held a series of sales shows either at its show rooms or in local hotels. In San Francisco its exhibit space in the Western Furniture Exchange was converted into a show space, Jan. 13-15, after a meeting of all west coast distributors on Jan. 6, 7, 8, at which John Knapp, sales manager of Norge, Detroit, and all department heads of the refrigerator washer and ironer, range, air conditioning, and heating divisions talked.

Following the San Francisco showing, on Jan. 19-21, a show for Sacramento Valley dealers was held at the new Meyberg branch house in Sacramento. The following week a showing was held in Fresno. Similar showings followed in southern California. And in the Northwest, North Coast Electric Co. held similar showings.

In presenting the line a stage with sparkling letters on a velvet curtain announced the slogan, "Again Norge Leads." From this stage each feature of the several new products was explained and demonstrated; the advertising program for the year announced, dealer helps described and inspiration given for a bigger year in 1937. Hailing the Low-Temp refrigerators as "a fundamental improvement" in refrigeration, its virtues in maintaining lower temperatures, higher humidities, keeping foods from two to five times as long, were sales points demonstrated.

Commercial refrigeration units were likewise demonstrated, as were the range, washer and ironer, and the heating, air conditioning and other Norge products. The handsome new range, with center placed surface units, two ovens, two utensil drawers, and a trick device for raising and lowering the broiler grid by means of a knob outside the broiler drawer, was enthusiastically received.

Scenes from the Detroit Kelvinator convention, at which Western distributors first viewed the 1937 line and placed orders for their dealers. Top, J. L. Conover, regional manager, San Francisco, signs up a big order from George P. Eggleston, general manager, H. R. Basford Co., San Francisco. Center, L. K. Vallandingham, manager, Kelvinator department, Tull & Gibbs, Inc., Spokane, is ready to sign on the dotted line that Larry Klein, district manager of Kelvinator, prepares for him. Bottom, W. S. Reinhard, Chicago Kelvinator manager, talks over new features of the line with Sam Kahan, president, Electrical Equipment Co., of Phoenix, Ariz.

NOT MUCH S. A. (Sales Appeal) to a water heater? Perhaps not. But what a wealth of appeal to continuous, automatic, safe, trouble free *hot water service!* Instead of fighting lack of interest over the heater itself, talk in terms of the *services* pictured here. These are real *wants* that the water heater can satisfy:

●

LUXURY OF KINGS for ordinary folks.

●

WONDERFUL FEELING of a swell shower, a luxurious shampoo, a shave with beard softening hot water.

●

WARM WATER ANY HOUR OF THE DAY—for the morning shower or shave, as well as breakfast—for washing without waiting—for household cleaning—to scrub up Junior after a hard afternoon's play—to lessen argument about Junior's bath.

●

EMERGENCIES—Someone sick in the night! Need hot water instantly. Doctor will need hot water when he arrives. May prescribe it.

ELECTRICAL WEST COOPERATIVE

APPLIANCE SALES GUIDE

Copyright 1937 by Electrical West, 883 Mission St., San Francisco

SELL THE BENEFITS OF HOT WATER SERVICE

JUST THE RIGHT TEMPERATURE—for dishes, hot enough to loosen grease but not scald hands; for bath—never steaming and dangerously hot. Automatically controlled at 140 to 160 degrees.

●

SANITATION—hot water kills germs. For cleaning house, clothes, dishes.

●

BE MODERN—why put up with grandpa's slow, tank patting, time wasting ways of getting hot water in today's fast moving, automatic age?

●

PEACE OF MIND—no matches, fire, or working parts for the children to get into. Water never dangerously hot. Can leave the house for days without worry whether it was turned off.

●

ABSOLUTE QUIET—Has no moving parts or combustion to make noise. Cannot generate steam to pound the pipes.

●

INSTALL IT ANYWHERE—Needs no vents or flue. Tuck away in a closet, build into the kitchen cabinets, basement or attic where it will be near the point of greatest use.

●

PORTABLE—If you move take it with you like your range or refrigerator. MAKES YOUR HOME MORE VALUABLE—gives it a better resale value because modern.

●

COOL—All the heat goes into the water, not wasted to the air.

●

CLEAN—Like a big thermos bottle. Attractive finish is easy to keep clean. Hot water makes it easy to keep everything else clean.

●

NEVER NEEDS ATTENTION—Nothing to do but turn the faucet when you want hot water.

Hard to Demonstrate Water Heating? Not With These

March 1937

WATER HEATERS

MAY not be practical to install a working heater to demonstrate in your store. It would not prove much if you did. But what you are selling is a HOT WATER SERVICE. Some of the best tools available, are slide-films, with sound. Most manufacturers of water heaters provide them.

●

SLIDE-FILMS with sound combine pictures showing the uses of hot water (those on this page are from Westinghouse films) and the records give a tested and proved sales story. Use on prospects, either in the store or at their homes. The outfit is portable.

●

VISUALIZER BOOKS — Such as that of Hotpoint (illustrated at right) on a self stand, with spiral or other loose leaf binding, present a consecutive story.

●

CUT-AWAY MODELS—Show the construction features of the heater.. Some manufacturers have actual models cut in half; other have drawings or pictures. Use these as proof of quality and of good design which in turn means long life and satisfaction.

●

DEMONSTRATION MATERIALS, such as the little smoke and glass gadget to illustrate cold water baffle action, are effective. Manufacturers have them. Ask.

NUMBER 3A

SHORT SALES TALKS That hurdle Sales Resistances

WATER HEATERS

● Last year dealers sold far more water heaters than in any previous year since they were first introduced. Better looking merchandise, special water heating rates, strong advertising support by the utilities, more widespread interest in the all-electric kitchen and home, have created opportunities in water heater sales that every live dealer can cash in upon. There is profit and satisfaction for the dealer, and good income for the salesman who learns to sell water heaters successfully—not a hard thing to do. By taking advantage of the sales material of manufacturers, by working with the utility's selling plan, there is money to be made in water heaters. Here Bill Smith, successful salesman, tackles the three most common sales resistances to water heaters. If you run into these obstacles, handle them as Bill Smith does here.

When the prospect says—

***Prospect:* "But it costs too much to heat water electrically."**

THIS is the good old price obstacle that every salesman must learn to face and outsell. The way to meet it in respect to water heaters is first to be armed with the facts as to real costs of operation. Get such data from users, from the utility, from your manufacturer. BE PREPARED to answer definite questions. Be ready to estimate the amount of water that will be used by the prospect's family. (See last page of this Guide.) Then you can take the edge off of the resistance by handling it diplomatically as Bill does here. Notice particularly his opening statement. It does not fully agree with the prospect's fear of cost, yet it does repeat the thought so as to assure the prospect that Bill understands his CONCERN over it.

BILL: "Cost is very important, and I don't blame you for wondering what it might cost to provide your family with dependable and adequate hot water convenience. Cost is important in anyone's language. That is why electric water heating, when you really dig down into *all* of the costs, is just about the most truly economical way there is to provide yourself with the cleanliness, the luxury, and the peace of mind that plenty of hot water will mean to your family. With the very favorable rates that are available here for water heating, there is no longer any reason to deny yourself ample hot water. Think of it, water of just the right temperature, every time you turn the faucet, for regular uses, or for emergencies, night or day. Let us just analyze your own needs for a moment *(proceeds to do so and estimates cost)*. This means that with a — gallon water heater you will have ever ready hot water, without a match or a second thought, from a quiet, beautiful, clean and cool unit. You can install it anywhere, and once installed, completely forget it. It will be better than a valet for you, more economical too. Every penny's worth of electricity you put into it will go into heat, not waste. In a furnace coil, reliable tests have shown that 20 per cent of the fuel has to go to provide hot water, really a costly way to provide it. With the electric water heater you will be independent of the furnace for your hot water service the year 'round. It will last longer because it depreciates less. It will increase the value of your home. Really, this electric water heater will give you more real value than any other method you could select to provide *equal service,* safety and dependability. Why not let us install it this week, so that you may really enjoy living with modern hot water service?"

When the prospect says—

***Prospect:* "But they take so long to heat up after you've used all the hot water for a couple of baths or a washing."**

HERE is a resistance which harks back to bygone days when inadequate installations were made—better than nothing, when they were put in—but inadequate as measured by up-to-date standards. Salesmen who have run into this resistance repeatedly swear they will never sell an inadequate job again. The only way to meet this obstacle is to do it somewhat as Bill Smith does here:

BILL: "Takes so long to heat up again? Yes, that was certainly true of the early days of electric water heating. It is unfortunate that such a situation developed. But don't you remember the first auto you drove, how it struggled hard at every hill you asked it to climb. Yet it was a thrill to own it at that. How different today, with really adequate power plants in modern cars. Same way with hot water. Remember how fine it was just to be able to have hot water at all in those days. Well, first thing we knew

we were using more hot water just because it was so handy and our old heaters and tanks just weren't big enough. We had not anticipated how convenient it would be to have plenty. That's why now we go so thoroughly into your own requirements before recommending a new heater. For instance for your family, let us figure it out with some accuracy. *(He proceeds to ask questions as to number of persons, bath rooms, faucets, baths, washings, etc., and calculates the water requirements.)* This means, then, that one of these clean, good looking, ever ready water heaters of — gallons capacity would give your family plenty of water. It would be water of just the right temperature, too, for every household need. Do you know we've listed some 150 uses for hot water around a house—and only a dozen or so for cold water? Why not replace that inadequate heater with one that will give you full service?

When the prospect says—

***Prospect:* "That's a lot of money to pay out all at once for a water heater."**

THIS is a perfectly natural reaction to any price. The reaction would be the same even if the price were only half as much. It cannot be dodged in any sale. But it can be surmounted and SOLD. Notice how Bill outbalances price with services and usefulness, and makes the price seem a real bargain.

BILL: "A lot of money? Yes, in a way, perhaps. We all want our money to get us full value, don't we? Honestly, when I really think it right through, I do not know where you can get a bigger dollar's worth for your investment than with a clean, safe, and automatic electric water heater like this. Let's see what it brings to your family. First it stands in some unobstrusive place, night and day, ready to give you hot water in emergencies—such as sickness—where it is mighty important in a hundred ways. Or it does all manner of ordinary jobs: dishwashing—made easier and more sanitary with good hot water; baths—no waiting for a tank to heat, no patting the tank hopefully—instead, if you come home grimy and hot in summer, or chilled and needing a nice warm bath, into a good hot tub or shower you can go with never a wait or a second thought! You will have hot water whether your furnace is going or not."

***Prospect:* "But I can get that with any good water heater."**

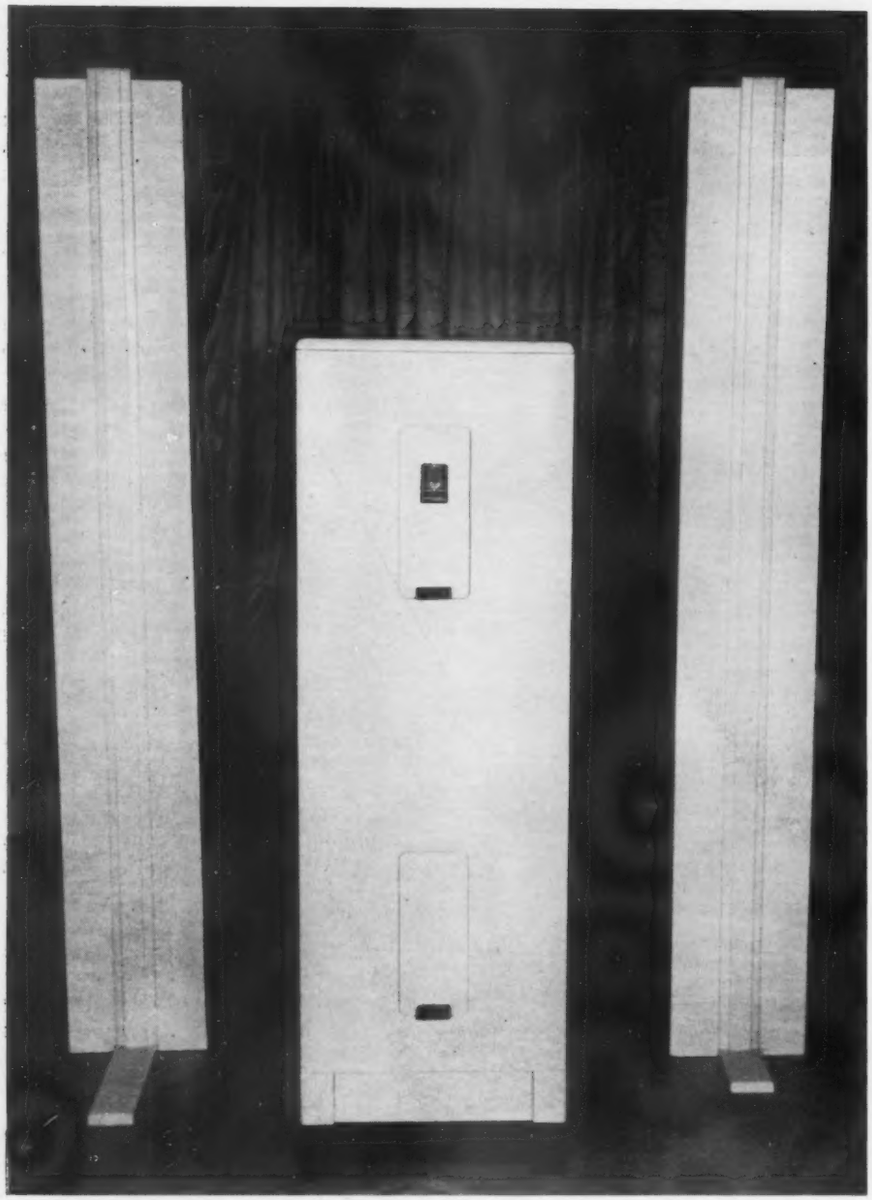
BILL: "True enough. Any good water heater will provide you with hot water. But here are some special advantages of an electric water heater. You need not worry where it has to go. No flue is needed, so it can go any suitable place. Here is one made to go right next to the sink, near the place where most hot water is needed That saves you lost heat in long pipe runs. It can go in a closet, even, or any unused space, for it is absolutely safe anywhere. If you have to move, like your range or refrigerator, you can easily take it with you. In your own home it adds to the resale value of the property. By controlling the water automatically between 140 and 160 degrees it saves you fuel cost on too hot water, or wasted water from an inadequate heater where you have to let the water run. And what is more, you have 24 hour hot water service. Hot water saves housekeeping time, makes cleaning tasks much easier, more pleasant. Altogether these special advantages of modern electric water heating add up to make it one of the very best and most economical investments, don't you think? And I can have this heater begin earning you dividends in service, convenience, cleanliness and comfort—yes, even luxury —by Thursday. What do you say?

PROSPECT: "Well, I don't know——"

BILL: "Think of the grand feeling—the peace of mind you'll have from Thursday on! It isn't just a water heater you will be bringing to your home, but the hundred and one, day-in-and-day-out ways that convenient hot water will make your lives so much richer. Just think. Come home tired—no trick at all to get into a hot tub or refreshing shower—no waiting for hot water until you lose the notion. Hot water for shaving, for cleaning, for sickness, for health —all at the turn of the faucet. Why put up with the wasteful, time consuming inconvenience of the past. Let's start a new era in your home beginning Thursday. Shall we?

IN each case Bill closes his sales talk with a definite request for the order. He has already pointed out advantages which the prospect cannot help agree are very desirable, even if he does not openly say so. Asking for the order is just a natural conclusion to such a presentation. THE SALESMAN WHO SELLS OFTEN IS THE ONE WHO NEVER FAILS TO ASK FOR THE ORDER OFTEN—after giving good reasons for owning and buying.

CALIFORNIA OREGON POWER CO. · PORTLAND GENERAL ELECTRIC CO.
MOUNTAIN STATES POWER CO. · PUGET SOUND POWER & LIGHT CO.
PACIFIC POWER & LIGHT CO. · IDAHO POWER CO.
NORTHWESTERN ELECTRIC CO. · WASHINGTON WATER POWER CO.
UTAH POWER & LIGHT CO.



WATER HEATERS

Require a

TALL DISPLAY

GOOD LOOKING new square heaters make striking displays, even if the old round ones did not. With modernistic vertical line styling, they look fine against any color of background. The background, however, should be tall, at least a foot and a half higher than the heater.

●

FOR INDIVIDUAL DISPLAY, either in window or along the wall of the store, set the water heater between two pillars, such as illustrated here, with a drape behind. The pillars for this height, should be of wood, for rigidity. A piece of molding down the center and over the top carries out the vertical line idea. Painted a light color or white, the pillars may have a contrasting stripe of color down the molding, even a metallic finish. It is better to have the same color as that on the escutcheon plate on the heater if possible.

●

DRAPE at the back between pillars may be corrugated cardboard, velour or satin. Satin or velour drape well, give a rich appearance to the display.

●

CORNERS are sometimes a problem in store display, but this type of setting in the corner of the window, or in a corner of the store, solve the problem.

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WHE YOU REMODEL your store, arrange at least one of your front windows so as to have glass down to within a foot of the floor. Do not build a permanent platform in it. (Temporary platforms can be carried in for special displays.) You will find it easier to display large and heavy appliances such as water heaters, ranges, and refrigerators. They can be moved in at floor level. Then too, you can take customers into the window to show a model there without embarrassment. It saves duplicating display models.

Quick Estimate of Family Water Heater Capacity

●

BEFORE making a thorough survey of a prospect's home and water heating needs, it is sometimes important to arrive quickly at a rough estimate of the size of water heater you ought to advise and sell. This should never take the place of a final and complete survey, but should serve only as a quick guide.

●

THE MANUFACTURER of your line of water heaters has charts, tables, and survey sheets to use in making an accurate estimate. If you cannot get them from him, get in touch with the utility's water heater representative. He will supply it. Or write ELECTRICAL WEST and data will be sent you.

●

QUICKEST WAY is to ask the prospect for his water meter readings for the months of November, December, and January. Chances are he did not use water then for lawn or garden. Average these readings. If the readings are in cubic feet of water, multiply by 7.5 to convert the reading to gallons. From 25 to 35 per cent of the monthly water consumption will be heated. This will give you a rough idea of what size tank to sell.

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ANOTHER WAY is to estimate the maximum day's use, with everyone using full quota. Then if that amount is provided, it is sure to be enough. Here are some fair averages:

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ALLOW 15 to 18 gal. per day for adults and for each child between infancy to 6 years. Children of 6 to 14 use about 8 to 10 gal.; from 14 on up, as much as, if not a bit more than, adults. Servants take double adult quota, or about 25 gal. Chinese servants have been found to use and waste more—about 35 gal. It is wise to figure 15 gal. to each extra bedroom, also bathroom.

●

ASK how many baths are taken. Add for an average bath about 15 gals., 10 gal. at 150 deg., the balance cold. If they like deep baths, or long showers, estimate 30 to 50 gal. Big old fashioned tubs take more water, too. Extra showers should take about 15 more.

●

HOME LAUNDRY usually requires about 6 more gal. per day per person.

●

ADD these all together to derive the maximum day requirement. Remember, once a family has automatic hot water it uses more. Suggest a heater size that will provide enough hot water for the unusual drain of an extraordinary day and then you will never have a customer complain, either to you or about you, that electric water heating is unsatisfactory. It will save you trouble calls too. Before the order is finally signed, it will pay to make a thorough survey at the premises.

Carson City Dealer Combines Store Opening

A double opening of an electric shop and coffee shop proved to be an event of first importance in Carson City, Nev., when the Carson City Electric Shop, operated by Hazel and Henry Karge, opened there recently. In the electrical business for over 25 years, the Carson Electric Shop moved to new quarters where it could display its merchandise to better advantage.

The main lobby contains mirror-paneled shelves and tables for display of lamps, toasters, etc., and the show window is built in steps of a modernistic studio arrangement. Interior lighting uses the new Silv-Ray silver bowl indirect units. Interior trim is in knotty pine and walnut. A shop and office at the rear provide facilities for repairs, estimating and bookkeeping.

●

A CLASSROOM LIGHTING TEST, being conducted by Gilbert Trosper, lighting salesman of Pacific Gas and Electric Co., at the La Fayette school, San Francisco, is to be continued for another year, it has been announced. The plan utilizes both artificial and day light control on an automatic system. Results to date indicate that pupils working under this test condition produce better work than those in ordinary classrooms.

IN HOT WATER — by Russell

"The salesman insisted we need it for standby—whatever that is."

APPLIANCE SALES REPORTS

A Summary of Dealer and Utility Reports Compiled by Associations, Societies, Bureaus, or Dealer Contact Department of Utilities

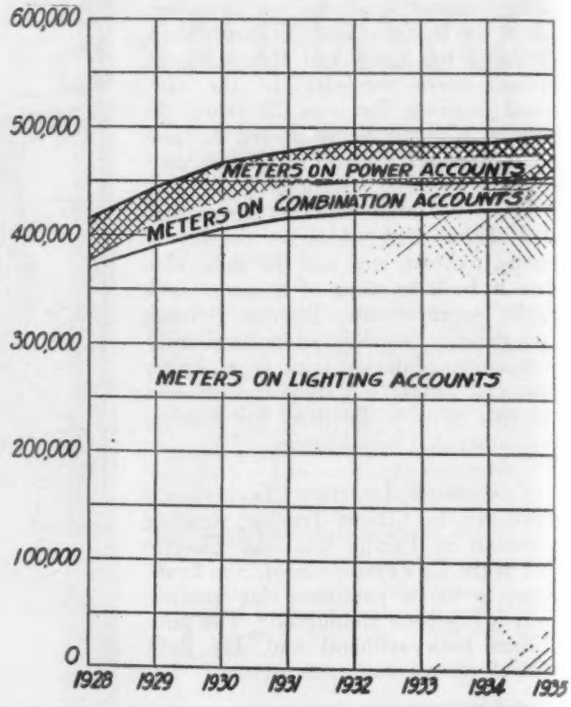
DECEMBER, 1936	P. G. & E. Co.[1]		San Diego Cons. G. & E. Corp.[2]		San Joaquin Lt. & P. Corp.[3]		So. Calif. Edison Co. Ltd.[4]		Utah Power & Lt. Co.[5]		Wash. Water Power Co.[6]		Idaho Power Co.[7]	
	Current	1 Mo.	Current	1 Mo.	Current	1 Mo.	Current	1 Mo.	‡Current	‡12 Mos.	‡Current	‡12 Mos.	Current	1 Mo.
Ranges	313	313	65	65	121	121	382	382	312	3,574	78	2,200	87	87
Water Heaters	213	213	55	55	73	73	238	238	88	996	49	1,459	20	20
Air Heaters, aux.	3,093	3,093	500	500	150	150	1,189	1,189	490	2,217	533	2,164	210	210
Air Heaters, 220	132	132			130	130								
Refrigerators	1,954	1,954	375	375	155	155	1,841	1,841	478	11,198	282	7,540	118	118
Dishwashers	62	62			1	1			4	53		8		
Washers	3,031	3,031	300	300	256	256	2,430	2,430	951	12,474	452	6,471	367	367
Ironers	1,076	1,076	65	65	49	49	510	510	103	669	59	689	54	54
Vacuum Cleaners	2,349	2,349	200	200	115	115	1,215	2,215	959	8,014	345	2,684	101	101
Radios	13,344	13,344	1,150	1,150	538	538	5,110	5,110	3,502	19,308	2,381	17,256	803	803
Mixers	3,541	3,541	90	90	51	51	501	501	1,400	5,538	1,054	3,060	106	106
Cookers, Casseroles			50	50	18	18	102	102	255	1,141	772	4,586	115	115
Irons			400	400	214	214	1,473	1,473	1,867	16,807	1,355	9,557	363	363
Waffle Irons			200	200	77	77	674	674	2,021	7,564	1,140	3,522	243	243
Toasters			250	250	107	107	831	831	1,939	9,683	1,567	7,012	222	222
Table Stoves			70	70	68	68	366	366	3,905	18,531	416	2,069	164	164
Heating Pads			400	400	127	127	800	800	829	3,906	513	2,046	177	177
Curling Irons							69	69	618	4,429				
Coffee Makers			250	250	94	94	414	414	1,429	7,186	1,715	6,838	184	184
Sewing Machines	1,409	1,409	75	75					193	1,889	71	768		
Clocks			325	325	113	113	607	607	1,198	6,758	1,113	3,907	107	107
Fans					5	5	31	31	52	4,856	45	2,633	59	59
Floor Polishers														
Sun Lamps							72	72	96	204	3	81	22	22
Reflector Lamps					163	163			2,610	13,354	3,345	11,655		
Miscellaneous Lamps					135	135	749	749	2,591	18,278	2,430	13,927		
Yard Lights					11	11								
Misc. Small App.					197	197								

APPLIANCE

[1] P. G. and E. reports obtained only on major appliances upon which accurate reports are available from dealers' accounts. Ranges, water heaters, and air heaters include company and dealer sales. Total dealers include gas as well as electric dealers. *Previous month's figures shown under current month's heading.
[2] Gathered by Bureau of Radio and Electric Appliances of San Diego County. Estimated monthly sales figures used in this table. Clocks, fans included under miscellaneous.
[3] Includes dealer reports from Midland Counties Public Service Corp. territory also. Compiled by Valley Electrical Supply Co.
[4] Includes reports from dealers on San Joaquin Valley system of the company as well as Southern California areas served.
[5] Includes Utah Power & Light Co. territory in Utah, Idaho and Wyoming. Also Western Colorado Power Co. territory.
[6] Dealer sales only for Spokane and company's territory. Company sales not included. Table stoves, grills included with cookers.
[7] Figures compiled by Electrical Equipment Sales Association. Include power company sales and sales of all reporting dealers—about 60% report.
‡ January report not available at time of going to press.

Meter Obsolescence And Replacement

Meter Modernization Problems as Viewed by Meter Engineers of the Southern California Edison Co., Ltd. Economics of Rehabilitation Program Still Obstruct Establishment of a Definite Procedure. This is the First of a Series of Reports of the Operating-Economics Section of the Pacific Coast Electrical Association to be Published in These Pages



THE Southern California Edison Company Ltd., has adopted a schedule and method of handling the retirement of those meters that it considers obsolete. The schedule affects all meters, both single phase and polyphase, manufactured and installed previous to sometime during the year 1914.

The plan embodies all of the single phase meters with irregular terminal chambers, such as the Westinghouse with terminals at the meter top, and those of the General Electric Company having terminals at the side of meter. This is extended to include the corresponding type of polyphase meter; that is, the polyphase meter built with the electro-magnet corresponding to the single phase meters which have been mentioned.

Except for the very old types, which include the direct current, or commutator types and those with cupped shaped disk, which are ordered removed when found, the employees of the company's Test Department "on routine test observe the load on those installations serving refrigerators and other motor equipment, heaters, heavy-current consuming devices, etc., and any meter that cannot be adjusted within commercial limits of accuracy on the normal operating load, will be ordered removed." Those meters which are of the types with irregular terminal location are considered obsolete when removed because of the test-man's recommendation, because of new construction, current diversion or similar reasons and are not to be reset but to be retired from service.

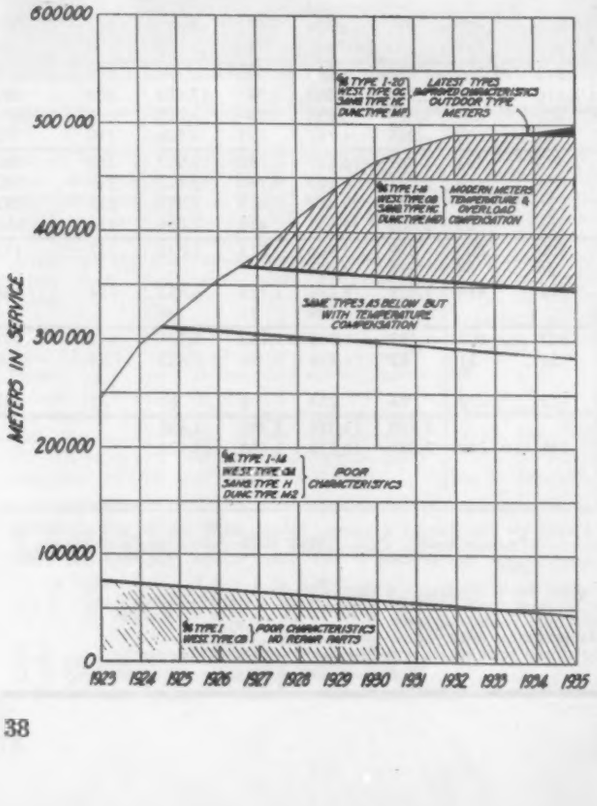


Fig. 1—Meters installed on the Southern California Edison Co., Ltd., system subdivided by classification. The second and largest group, identified as those with "poor characteristics" presents a major problem of economical modernization to protect revenues in these days of greater electrical usage. Above is shown the classification of total meters on the system according to customers.

Fig. 1 shows a proportionate indication of the make-up of the types and characteristics of the approximately one-half million meters now in service on our lines. From this chart it can be seen that the number of older type meters, i.e. those manufactured previous to the advent of the standard shape meter, about 1914, has been gradually reduced. The largest block on the chart indicates those types familiarly known as the "OA" of Westinghouse, "I-14" of General Electric, "H" of Sangamo and "M-2" of Duncan.

This, as will later develop, is the problem group. It is the group that predominates in numbers, it is the group that embodies meters, some of which have been in service in excess of twenty years and it includes those meters that do not approach the so-called modern meter in electrical characteristics and are of questionable mechanical construction and design.

A program for automatically retiring these meters and replacing them with installations of modern meters is a very important problem with this organization and from these P.C.E.A. meetings it is hoped will evolve helpful information. As meters in the larger group are removed, because of remodeling and incidental increased load or where new sequence meters are installed, a temporary outlet may be found in the small

seasonal loads such as mountain and beach cabins where the total kilowatt hour consumption seldom exceeds the minimum charge. It is believed that due consideration should be given to the age of the meter because of accounting depreciation procedures. Consideration should be also given to the mechanical features because of new sequence requirements for a weather-proof and as near a theft-proof installation as possible, keeping in mind the general appearance and simplicity of the installation. Perhaps the most important consideration should be given to the electrical or operating characteristics when considering the obsolescent factors of any instrument. It is the performance characteristics that determine the accuracy of the meter registration. Present conditions require closer limits of tolerance than were possible when many of these older meters were installed. Working under today's conditions of more general use and application of electricity and with the tendency in this direction toward greater saturation, very diligent thought must be given to the corresponding performance characteristics of those meters purchased in the past with those now available.

A study of normal performance characteristics, as disclosed by comparable tests, conducted on several types of meters, marketed by the major manufacturers during the past thirty years, shows several interesting factors. First, a marked improvement is noted in the design of those meters purchased about twenty years ago as compared with the early types; second, further improvement is shown in the product available during the past few years. The present day meter indicates the progressive result of the manufacturers' recognition and acknowledgement of the increased load conditions and requirements imposed on the utilities metering equipment.

Referring to Fig. 2 it is apparent that the older meters should not be used on installations where the operating load exceeds the rated capacity of the current coils, except if the under-registered delivery is inconsequential. This is true both with non-inductive lighting loads and where low power factor deliveries are made. It is true that the normal temperature rise characteristics of this type meter tend to compensate the under registration with unity power factor loads. However, in most of the older meters, the under registration is amplified with low, lagging power factor loads.

In the analysis of the various factors effecting any recommendations for a policy of conversion or retirement it is acknowledged that the older meters are subject to major factory modifications

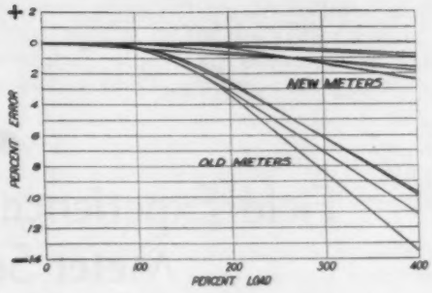


Fig. 2—Comparison of performance characteristics between an old and modern meters. Note the rapid decrease in registration of the old meter beyond rated capacity

of the current coil rewinding with heavier conductors, and the addition of overload and temperature compensating devices. In such consideration the slightly larger continuous potential coil losses normally inherent in some of the older meters should not be ignored.

Up to the present time this company has not converted any of its old meters in order to adapt them to modern installation requirements. This is due perhaps to two reasons. First, no decision has been reached up to the present moment as to where and with what vintage meter this conversion should start. In view of the improved performance characteristics produced by the meters purchased today, is rewinding of the series coils of these older meters in order to increase overload capacity justified; is adding series coil overload compensation justified; is adding temperature compensation justified; and finally is it economical to rebuild conventional types to the so-called socket or plug-in type, or to the complete A type conversion which is also available? If all of these improvements should be embodied, the rebuilt meter would closely duplicate the meters obtainable today, both in mechanical and electrical characteristics, but what of the cost? Furthermore, if a reconditioning program be adopted, what assurance is there that any replacement parts required five years hence can be purchased at no greater costs than now paid? No doubt a new meter could be purchased for little, if any, more than the above program would involve. If such a broad program is not adopted what feature could be eliminated? And when the elimination is made, with what basic characteristic are meter engineers most concerned? Shall the start be with the group having no temperature corrections; definitely poor overload and the power factor characteristics, and limited compensation, or shall the program be one of conversion of only those meters with the very best electrical characteristics but doubtful at least as to some mechanical applications?

As a second reason why this Company has not adopted a conversion program up to the present time is because it has not been possible to satisfy the requirements of new sequence installations both from a mechanical and cost standpoint, in a most satisfactory manner.

The retirement program has enabled reinstallation of semi-modern meters acceptably. By use of a low cost adequate housing an outlet is retained for all of the semi-modern meters which otherwise would present a very serious disposal problem because of the large percentage of the total meters represented by this group.

Another very important subdivision is that of demand meter obsolescence. Demand metering requirements are increasing it seems, with every revision of rates issued by our rate experts. Volumes have been compiled on the subject of demand meter problems and demand meter maintenance. Up to the present time the subject has far from a satisfactory solution, either by the manufacturer or by the operating engineers. Of course, progress has been made, but in no branch of the metering art is there a field which presents such difficulties for solution as that of demand metering. The life of the demand feature is far in the background and all demand meters (as far as the demand feature itself is concerned) will become obsolete with the advent of a device which will be dependable for a given period of time without service and, which, after cleaning, inspection and test, may be returned to the line for a similar period of dependable performance.

The subject of meter obsolescence is indeed one requiring not only the very best efforts of meter engineers and accountants, but is also one in which management must, of necessity become interested.

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Methods of Detecting Current Diversion*

By GRAFTON R. GEERING
Pacific Gas and Electric Co.

CONSIDERING the evidence which indicates that substantial numbers of customers are employing means to divert current and the appreciable loss of revenue which is suffered by the public service companies as a result, methods of detecting such practices become increasingly important. For presentation to the metering subcommittee of the Pacific Coast Electrical Association, the following summary of detection methods has been compiled as a contribution to general exchange of information on the subject.

One of the most common methods of checking current diversion is the use of

*P.C.E.A. report of Metering Sub-Committee.

district or group check meters. While this practice will uncover the presence of current diversion, it does not locate specific meters which have been tampered with. It does, however, indicate localities where more specific methods of detection could be employed profitably. The second method is the field investigation of tips received from various sources, the most common of which are:

a. Meter readers (supply major percentage of tips).

b. Consumption record from bookkeeping records.

c. Anonymous letters and phone calls.

d. Meter tester.

e. Servicemen who work locks and unlocks.

After tips have been received, general practice may be summarized as follows:

a. Tips with definite tampering information are analyzed by studying consumption record, meter test record, consumer's occupation, and location as to distribution facilities. Pole check meters are installed on most likely of this group of tips, without preliminary field inspection.

b. Tips without any special information are given to field inspector without further delay.

In making a field inspection, the following items should be noted and given due consideration:

a. Type of service is noted, condition of meter and seals, meter connections checked, fuses checked, load wiring tested for grounds and back feed and main switch inspected, back connections, service wires inspected in back of meter board and in basement.

b. Condition of consumers premises is noted—type of building, etc.

c. Where tampering is found, the evidence must be conclusive before asking consumer to report to office. Previous consumers and previous addresses of suspected tamperer are checked for tampering evidence.

Check meter installations, while one of the most expensive methods of detecting current diversion have the advantages both of giving positive indication plus the amount of the theft. In making such installations, every precaution should be taken to prevent the customer from a knowledge that the installation is made. A small galvanized iron box 6 in. x 7 in. x 6 in. painted with pole paint green and with a small meter, such as type O.B. or O.C. mounted in same, is used principally for a check meter. It is generally installed on the service pole by a meter inspector (formerly a troubleman) at a time when consumer is not likely to observe inspector making installation. Sometimes it is installed during the night hours.

Check meters are left up at least two months (generally six months) before contacting the consumer. Check meters are tested before each installation. When investigating tampering case, the billing meter is generally tested at time of inspection.

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Field Experience With the New Meter Sequence

Careful Inspection Shows High Percentage of Current Diversion in a Rural District. After New Sequence Installation Metered Consumption of Energy Doubled. Changeover Costs Presented

By C. P. TAYLOR
Pacific Gas and Electric Co.

THIS is primarily a report on the experiences of the operating personnel of a rather large rural district, and of such conclusions as may be drawn from these.

The district referred to is a typical rural section. People living in it are made up of a good class of Americans. It has approximately 17,250 electric consumers under the following classifications:

Domestic	11,850
Commercial	2,450
Agricultural Power	2,250
General Power	650

Up to June, 1933 there did not appear to be any particular diversion problem. Occasionally, meter readers and testers brought in reports of jumpers found or evidence of meter tampering but not to an extent to cause any particular concern. Then came the deluge. A number of incidents happened which resulted in a quick inspection of a large number of power installations in a congested area. The results were startling, to say the least. Half the plants inspected were caught "red handed" with meters stopped or by-passed, and evidence found on plants not operating of meter tampering. One section was so bad that the employees still call it the "Den of Iniquity." After this inspection work was continued for several months extending to lighting and range customers. Leads were obtained from a check up of customers' records. Hidden check meters were used.

The data thus gathered showed the situation to be serious. Many clever schemes were used, some so clever that the check meter was the only means of detection. There was evidence of experts being hired to install some of the devices used.

Study of the situation indicated that the only sure cure was the installation of iron-clad, theft-proof jobs, using the new meter sequence of meter-switch-fuse. Customers caught "red handed" were required to put in such installation at their expense. Suspect cases were put in at company expense. Cor-an-Brown and Superior Switchboard Company metal box meter housings were used. The Superior product is now preferred on account of the Surlock seal. It was found seals are not always seals. The lead disc and wire seal with a little patience can be opened and put together again so that it takes careful inspection to detect the tampering, requiring more time than a meter reader can spare.

Since January, 1936, socket type meters and the new sequence are being used on all domestic installations both old and new. There being no electrical ordinances to contend with in a rural district, the company can enforce it on requirements on meter loops.

Has the new sequence theft proof installation accomplished its purpose?

Here are data obtained from a random selection of the customer record books. The number of cases covered is small but it is a fair average and reliable:

20—3 wire range customers used 21,923 kw.-hr. in one year previous to change in meter installation. After change 57,889 kw.-hr. were used. That is an average per consumer of 91 kw.-hr. per month before, and 241 kw.-hr. after. What the actual use was before change of meters cannot be determined but certainly free kw.-hr. will not tend to economy of use.

10—lighting consumers used 3,200 kw.-hr. before, and 9,278 kw.-hr. after, an increase of 190 per cent.

20—power consumers used 124,015 kw.-hr. before, and 241,386 kw.-hr. after, an increase of almost 100 per cent.

Meter rates were changed between the before and after figures and time was not available to get out the data on actual increase in revenue. Due to the service charge and the sliding scale meter rates, the revenue is, of course, not in direct proportion to the increase in kw.-hr. But the dollar increase is sufficient to more than pay for the new

P. C. E. A. Report

installations in less than one year's time.

All cases from which the data were obtained were known or suspected. A complete change-over of all meters in the district would not give proportionate increase as there probably and undoubtedly are many really honest people who still believe it is as dishonest to steal from a public utility as from anyone else. But pessimistic as it may sound their number seems to be steadily decreasing.

What is the cost?—an all important question in this day of straining every effort to reduce costs of distribution. On new domestic installations, where the consumer is required to furnish the box trim or meter socket, there is little difference in first cost.

On new polyphase installations where the socket type meter can be used, where consumer is required to furnish the socket, the new type metering at present has the advantage due to the lower cost of the meter and the simplified meter setting. The real cost problem lies in the expense of revamping old installations. Summarized figures are as follows:

On 2- and 3-wire domestic jobs two courses can be followed. Use metal meter housings in the old type meters or change all jobs to the socket type meter. In both cases figures given cover the cost of installing the meter outdoors with conduit wiring and cost of moving service, which is frequently necessary. Also, figures quoted are approximate averages covering many installations.

Cost of changing over 2- and 3-wire meter jobs using box housings—$16.

Cost of socket type installation—$10.

To this latter cost must be added either the present value of old meters, if they are to be junked, or the cost of converting old meters to the socket type. Actual shop figures show that OA, OB, 1-14 and 1-16 meters can be so converted for approximately $3. The total cost for the socket type installations is therefore approximately $13. There will be some older type meters such as Type "I" that cannot be converted and must be junked. The present cost of these meters should not exceed $6.00 per meter and they are relatively fewer in number.

The polyphase installation presents a different problem. Cost of putting old type meter in a metal housing is $22. Cost of the socket meter installation is $16. None of the old type polyphase meters can be changed to socket type. The present value of old type meters will average at least $20. This added to the $16 installation cost gives $36 that must be charged to the socket type job. It is, therefore, apparent that the metal box housing is the most economical type to use for changing over old installations.

Applying these costs to a large utility system having hundreds of thousands of meters runs into figures so large as to be staggering. On the other hand, may not actual loss of revenue from diversion amount to figures to be subject for sober thought? As to how far and how fast to go is a question that can only be answered by a careful study of the entire situation.

In summing up, there can be no question but that the new meter sequence will accomplish its purpose of discouraging and preventing diversion of energy. The question may be raised if the practice cannot be discouraged in a cheaper way such as continual inspection. The utility is in rather a unique situation in handling the problem. For public relation reasons alone public service companies cannot make drastic examples of guilty consumers. The consumer, therefore, has everything to gain and nothing to lose from a materialistic point of view, at least, in "beating" a meter. The only sure way then is to remove the temptation and be sure all used kw.-hr. are metered kw.-hr.

No business man puts his money tills at the collection counters on the public side. Why should we make it easy for a consumer to "beat" the meter? Kw.-hr. on the meters are cash just as much as the coin that goes into the tills. Besides stopping conversion, there are other advantages that the new sequence has on the credit side. Meters are weather proof, which reduces maintenance. They can be located out doors, which increases the efficiency of the meter readers and meter testers. Locked meters need not be left idle on the job, no small item in itself. The consumer is not disturbed during reading and testing, an important item for better service.

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Kitchen Design—An Aid To Load Building*

By WALTER BRENTON
Chief Engineer
Portland General Electric Co.

THE complete electric kitchen presents an amazing array of energy consuming devices. To be considered complete, the modern kitchen must have the following electrically operated appliances: range, refrigerator, dishwasher, water heater (generally located in some other part of the house), waste disposal unit, kitchen ventilator, adequate lighting fixtures, and a sufficient number of convenience outlets for the operation of such auxiliary devices as mixers, food choppers, waffle irons, toasters, etc. It is a problem in the average kitchen to find room for these appliances and still have anything left for storage space and work space. Many salesmen have found willing buyers of electrical appliances but have lost the sale because the prospect could not see how space could be found in the kitchen for the additional unit.

It is at this point that the engineering department can be of great assistance to the commercial department in load building. The Portland General Electric Company, in common with many other utilities, has recently established a kitchen planning division, offering free kitchen planning service to any customer. It was logical to establish this new department within the architectural division of the engineering department on account of the existing drafting facilities and the appreciation of structural as well as artistic problems on the part of the personnel in the division.

Any salesman in the commercial department may request a kitchen plan for a prospect. The salesman measures the kitchen and also turns in any special request of the customer as to arrangement or color scheme. If structural changes are required, a member of the engineering department inspects the premises in order to pass on the feasibility of such changes before any layouts are made.

The actual layouts are made according to the latest principles of kitchen economy. The preparation of a meal with the minimum expenditure of time, effort and steps requires a kitchen in which the proper allocation of space has been made to the preparation center, which includes the refrigerator; the dishwashing center, which includes the sink, electric dishwasher, and disposal unit; and the serving center, which includes the electric range. Not only must proper space allocation be made for these three centers, with suitable storage and work spaces for each, but these three centers of activity must be properly coordinated with each other from a progressive functional standpoint, giving consideration to the point of delivery and the final point of serving. In cases where

*A report prepared for the Utilization Committee, Engineering and Operation Section, Northwest Electric Light & Power Association, for presentation at 1937 Annual Section Meeting.

special requests of a customer are not in accord with the above considerations, a plan is prepared in exact compliance with the customer's request and then an aleternate proposal, which is usually adopted by the customer, is submitted.

The drawings, as actually prepared, are 10 in. x 16 in. in size, drawn to quarter scale. A plan view of the kitchen is drawn and a perspective view, in which the three centers can usually be shown, rendered in the suggested color scheme, is also prepared. It has been found that the average customer gets a much better conception of the proposed kitchen from a colored perspective than from the usual elevations. Pencil drawings are made on paper. Before coloring, a couple of blue prints are made for the use of the builder. The original drawing is then colored, mounted on cardboard, covered with a sheet of cellophane and then set in a white cardboard frame. While this is a free service available to all customers, it does not in any way conflict with the work of architects, since no structural detailing is performed. In fact, many architects and builders have utilized this service.

During the months of August, September and October, 1936, 56 plans were prepared for architects and builders. These may be considered promotional in nature as the actual sales of appliances will depend upon the purchasers of these new houses. Also during this period, 139 plans for remodelled kitchens were prepared for the sales organization for definite prospects. These have resulted in the sale of 231 major appliances as follows:

Ranges	118
Refrigerators	25
Water Heaters	80
Dishwashers	8

The number of units sold per plan, within 60 days of completion, for this period were:

62 plans	1 unit
51 plans	2 units
21 plans	3 units
1 plan	4 units
4 plans	none

These appliances add an estimated annual revenue of $8,600 at an additional cost of approximately one man-day per plan issued. This extra cost in the drafting room is doubtless more than offset by a reduction in the salesmen's time in closing sales.

While the above figures represent the tangible results, there are other results of incalculable value. In the cases where only one or two units were sold within 60 days from delivery of plans, the salesman is almost certain of additional sales at some later date when the customer is able to complete the kitchen as planned. A customer who has received a definite service from the company without obligation on his part naturally feels friendly toward the company and this from a public relations viewpoint is of inestimable value.

At one time, the kitchen was one part of the house where th entrance of guests was studiously avoided. Today, the modern electric kitchen is the showplace of the house for friends and neighbors. In a number of instances upon the completion of remodernization of their kitchens according to plans furnished, the customers have been so pleased with the results that they have requested demonstrations in their kitchens by members of the company's domestic science staff to which they could invite their friends. Many new contacts are established in this way, and a number of requests have come directly to the company for kitchen designs that have resulted in appliance sales.

Let's Use Night Air to Sell Air Conditioning

R. H. ROBINSON
ILG Electric Ventilating Co.

AIR conditioning is the popular topic of the day and has the attribute of being able to sell itself to those who try it. Despite this ideal combination of public acceptance and comfort-giving performance, its sale to the smaller customer such as the shop or residence often is held up because of the expense of equipment and installation. In the popular meaning of the term, air-conditioning may mean any one of the five features of a complete system but most laymen take it to mean air cooling. Gradually, the public will be educated to recognize the full meaning of the term and eventually complete conditioning probably will be considered just as much of a necessity in new building as the heating system is today.

However, it should be practical to capitalize upon the public's current appreciation of air cooling to hasten a general demand for complete air conditioning. To do this at present it is necessary to take advantage of every factor that will produce comfort cooling at a low cost. As Nature offers her products to us at no cost other than their utilization why not turn to her for assistance?

In a great many parts of the country, there is a cooling medium which is unlimited in supply and very inexpensive to utilize. This is the cool air of the night time. But, as this cool night air is not available during the day when most needed, we must find some way of storing its effects. This can be done by utilizing it to extract the heat which accumulates during the day time in the building walls, furnishings and fixtures of a room. A surprisingly large storage of cooling capacity can thus be obtained to help carry through the heat of the day. In an ordinary sized store room with an average stock of goods this storage capacity may easily equal 1 ton of cooling capacity per degree of temperature. That is, as the temperature of these walls, furnishings, etc., is reduced one degree, there is stored up therein enough cooling capacity which if utilized within one hour during the next day would equal the cooling effect of 1 ton of refrigeration or of melting 83 lb. of ice in the same time.

Thus, if the temperature of these walls and furnishings can be reduced 15 deg. during the night time and this cooling capacity utilized over a period of 5 hours the next day, the equivalent of a 3-ton cooling system will be obtained. Against the equipment necessary for a 3-ton cooling system, all that is needed to obtain this precooling is an exhaust fan to draw the cool night air through the room. It will there pick up heat and will then be exhausted to the outside again.

The rate at which this air will pick up heat from the objects in the room is dependent upon the difference in temperature, rate of movement of the air over the objects and the rate of transmission of the heat from the center to the outside surface of the materials. It will be seen, therefore, that it is necessary to pass a considerable volume of air through the room for effective cooling. It is recommended that at least a two minute air change be used.

As the rate of cooling decreases with the difference in temperature it will not be economical to attempt to get the temperature of these materials too close to the outside temperature. However, in many parts of the country it should be possible to cool at least 15 degrees below the day temperatures to get the results above indicated. This can be accomplished in about 4 to 5 hours operation of the exhaust fan at an operating cost only about one eighth that of the 3-ton cooling system.

The rate at which this cooling capacity is used the next day, again depends on the difference in temperature and the amount of air passing through the room.

Therefore, it is advisable to keep the room closed as much as possible and to admit only such air as is necessary to maintain a proper degree of ventilation. As the maximum day temperature does not usually occur till about 2:00 p.m. and if the internal heat load in the room is not too great, the cooling effect should last well past the noon hour.

This method of night time pre-cooling offers an opportunity of obtaining at small cost much of the advantage or air cooling. It is a subject which should be given careful consideration by architects when designing new buildings, but it is a scheme that can as well be applied to existing buildings with minimum alterations. It should be of interest to central stations as a chance to build load with small fans having a good load factor. For dealers it offers not only the sale of ventilating equipment, but a wiring job as well.

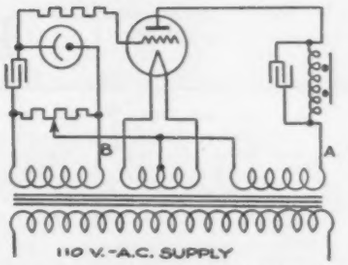


Fig. 2—Connections for photo-electric control and amplification using an A.C. source

Vacuum Tubes in Action

By H. C. STANLEY
Asst. Engineer, General Electric Co.
San Francisco, Calif.

IV—Photo-electric Phenomena

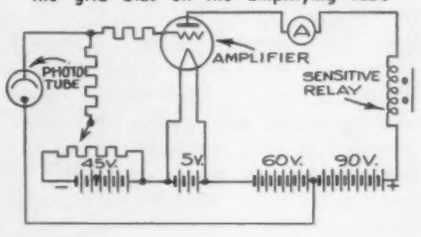
SOME of the characteristics of electrons have already been shown, There certainly is no dearth of them for they are ubiquitous to the nth degree. They abound here and everywhere, being component parts of every substance. For our purpose they can be considered as minute particles, each carrying a negative charge of electricity. As such they are attracted to points of positive potential. Heat excites them to feverish activity, and causes them to escape their usual haunts. The fact that electrons are influenced by another condition has opened a wonderful field that truly borders on the magic. This influence is that of light, and this brings us to the subject of photo-electric phenomena.

When light strikes certain substances electrons are liberated from these substances. Some substances are much more responsive to this action than others, and these active materials are known as the alkali metals, lithium, sodium, potassium, rubidium and caesium. Inasmuch as electrons liberated from these elements could not be harnessed in ordinary air we must again resort to an evacuated medium. This is accomplished by the photoelectric tube, which contains a metal sheet coated with one of the elements above listed. This coated sheet is the cathode, and is the source of electrons. Near the cathode is mounted an electrode, which commonly is a piece of wire. This electrode is the anode. So our famous electric eye is merely a small evacuated tube containing two electrodes as above described. When this tube is exposed to light, electrons are liberated from the cathode surface and find themselves in a vacuum and accordingly are free to go whithersoever they may desire. Their interest is immediately aroused if a positive potential is applied to the anode with respect to the cathode, and a stream of electrons passes between the electrodes. This stream of electrons constitutes an electric current of very small magnitude, only a few millionths of an ampere. However, this small current can readily be amplified to any desired degree by a vacuum tube. The photo-tube current varies with the amount of light. When the tube is dark, there is no current, a little light creates a little current, more light more current and so on. In this type of photo-tube it is important to note that light of itself generates no electric current, but merely liberates electrons which cause current to flow when electric potential of proper polarity is applied between the electrodes.

A simple circuit using dry cells as source of power is shown in Fig. 1. The battery at the left of the sketch provides an adjustable negative bias for the grid of the amplifying tube. This negative bias is necessary to prevent current from flowing when the photo-tube is dark. When light is admitted to the photo-tube it passes current, thus making the grid more positive and permitting current to flow through the coil of the sensitive relay. The milliammeter A will show that the plate current varies as the light on the photo-tube varies, so that the light intensity will be indicated by the ammeter reading.

However, the real magic of this assembly is that the contacts of a relay can be closed by a beam of light and these contacts opened by the interruption of that beam. Such a relay can be used for switching lights on when daylight fades and off again when the night has passed. The uses of this device are too countless to enumerate in length.

Fig. 1—Simple photo-cell connection using the photo-tube output to change the grid bias on the amplifying tube



For most applications the photo-electric relay is operated from an a.c. source as shown in Fig. 2.

As the amplifying tube will carry current only when point A is positive, current flows through the amplifier only during the positive half-waves. The capacitor across the relay coil is charged during the positive half-wave and discharges through this coil during the negative half-wave, thus effecting practically continuous current in the coil. When point A is positive, point B is also positive, and if the photo-tube is exposed to light, it will pass current which charges the capacitor at the left of the diagram. This builds up a positive potential on the grid of the amplifier. When the photo-tube is dark the bias portion of the transformer charges this capacitor in the opposite direction, making the grid negative. In this manner the amount of light on the photo-tube will determine the amount of current in the relay coil.

Another type of light sensitive device is based on the fact that the resistance of selenium varies with the light to which it is exposed, the "dark" resistance being very much higher than the "light" resistance. When a constant voltage is impressed across the surface of selenium, the current that flows will vary with the light.

Probably the most interesting type of light sensitive device is the photo-voltaic cell. This cell when exposed to light actually produces an electromotive force of its own. The construction of these cells is very simple, being a metal plate having a thin layer of oxide. When light strikes this oxide, a voltage builds up between the metal and the oxide, and if an external circuit is established, a current will flow. The maximum voltage is very low, about one-tenth of a volt, but the output is sufficient to actuate delicate relays, or micro-ammeters. A combination of photo-voltaic cell and micro-ammeter makes an excellent light-meter, which can be carried in the vest pocket. With the scale of this tiny assembly marked in foot-candles, we have a very handy and valuable instrument indeed.

Part of the Maxwell flock — electrically hatched and electrically brooded.

Turkeys Thrive in Pit-Type Brooder

By S. J. HOLSINGER
Agricultural Power Specialist
Pacific Gas & Electric Co., Sacramento

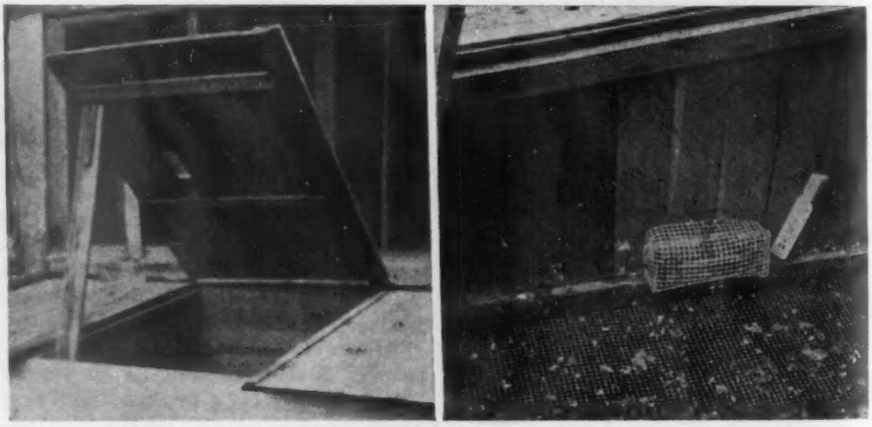
SUCCESSFUL experience with electric brooding of poultry has led to the development of a wide variety of brooders and to the extension of this type of brooding to other fields, including game birds and particularly turkeys. In the past two or three years an increasing number of turkey raisers have resorted to electricity for the purpose of hovering their poults. In most instances the conventional type brooders have been employed; however, there have been a few enterprising turkey growers who have attempted to perfect brooders which would not incorporate the disadvantages of the usual hover type.

One of these is R. M. Maxwell of Carmichael, Calif., who has successfully adapted electric heating to the so-called "pit" type brooder. This is a wood fuel burning brooder consisting of a pit five to six feet deep in which the fire is placed. The pit is covered with sheet iron. Instead of leading up into the air, the smokestack is laid horizontally on a slightly rising pitch in a trench dug through the nearby brooder house. A vertical rise at the end of the pipe provides the draught. The brooder house is divided with screen into 4-ft. sections. A hover or canopy is placed over the pipe. It was from this idea that Mr. Maxwell developed his novel electric brooder. His aim was to obviate the principal objection to the wood burning brooder, namely the inability to obtain satisfactory temperature control.

A pit 4 ft. by 4 ft. and 96 ft. long was dug along the east side of a typical laying house. This pit was cemented 4 in. thick to a height of one foot above the ground level. At the ground surface the pit was covered over with ¼-in. galvanized wire mesh supported by cross members at 3-ft. intervals. The brooder compartment, which was set on the concrete is built up with 1 in. by 4 in. tongue and groove. The outer wall is 2 ft. high and the inner wall next to the laying house 3 ft. Permanent partitions are placed every 3 ft. to provide 32 compartments. Hinged covers of tongue and groove which overlap at the ends to keep out rain are placed over each compartment. A sliding ventilator is provided in the top and in the outer wall above the concrete footing.

Conventional type 500-watt strip heaters set on edge are located in the center of each compartment 6 in. below the mesh floor. An inverted metal trough covers each heating unit to prevent the accumulation of droppings. Control of the heaters in banks of four is provided by a standard 25-amp. wafer-type thermostat located in every fourth compartment. This is covered with wire mesh for protection and is set 4 in. above the floor. All wires are run on the side of the pit beneath the floor. Both ends of the pit are provided with hinged doors which permit an attendant to scrape up the droppings which fall from the screen floors above.

Entrance to the laying house is through sliding doors at the back of each heating compartment. The house is divided into sections by wire screen and all floors are covered with ½-in. wire mesh raised 4 in. from the ground. Thus the young poults are never in contact with the ground during the brooding period. All water cans and feeders are placed on the wire mesh.



Exterior (left) of one of the 32 electrically heated "pit" type brooder compartments, and (right) interior of a brooder compartment showing thermostat, thermometer and the wire mesh flooring above the pit in which the electric heaters are located.

This type of brooder has several distinct advantages which have been proven by a season's use. These include: (1) sanitary features which assure freedom from disease; (2) rapid air circulation provided by the deep pit; (3) freedom from excessive moisture; (4) saving in labor due to the

fact that 2,400 poults can be accomodated in a single structure.

Mr. Maxwell recommends placing from 50 to 75 poults in each compartment. In 1936 he started with 300 hens and 38 toms. He has a 3,600-egg electric incubator and hatches all his own eggs. With this stock and equipment he produced 2,300 baby turkeys and raised 2,125, a mortality of approximately 8 per cent, which is considered excellent for turkeys. He now has 600 hens and 70 toms and expects to produce twice the flock this season.

Proof of the economy of operation is demonstrated by his electric bills for April and May, the two peak brooding months. The bills were $28 and $32 for the respective months. This included not only operation of the 16 kw. of electric brooders but five 40-watt yard lights, the incubator and the house as well. Most of the energy was billed at a rate of 1½ cents per kw-hr., the low step in the P.G. and E. D3 rural lighting rate.

In commenting upon the satisfactory results obtained from this type of brooder, Mr. Maxwell stated that rapid growth and even "feathering out" of the young birds were noticeable advantages.

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MORRIS L. COOKE, who headed the Rural Electrification Administration from its inception in May 1935, resigned last month. REA will be in the hands of John M. Carmody, who was appointed assistant administrator last August. Mr. Cooke worked with the Ickes power policy committee and was previously with the National Resources Board.

New Electric Brooder Has Insulated Hover

Several refinements leading to better operating characteristics and greater economy are incorporated in a new electric brooder placed on the market by the Farmers Electric Co. of North Sacramento, Calif. Principal feature is the double metal shell construction of the dome, which permits the insulation of the brooder with from 2 to 5 in. of fireproof spun glass insulation to cut down radiation losses.

The brooder is of the curtainless type with adjustable legs. The heating element is mounted in a metal cylinder under the center of the dome giving a chimney effect which assures positive circulation of the heated air. A dry floor beneath the hover is one of the advantages. Heating units are such that they may be changed easily for operation at either 110 or 220 volts. Observation door, thermometer, control panel with dial for adjusting the thermostat, pilot light and control switch for an attraction light are additional features. Slope of the dome of the hover is such that chicks cannot stay on it. The brooder is available in 500 and 1,000 chick sizes. It will brood approximately half the number of turkey poults.

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RECENT ALLOTMENTS by the Rural Electrification Administration in western states include those to:

The Goose Lake Valley Rural Electric Assn., Lakeview, Ore., $60,000 to build 60 mi. of line to serve 168 customers; Public Utility District No. 1, Spokane, Wash., $55,000 to build 50 mi. of line to serve 250 customers; The Wyrulec Corp., Lingle, Wyo., (loaned up to) $29,000 to build 25 mi. of line to serve 78 customers; The Lower Yellowstone Electrification Assn., Sidney, Mont., $115,000 to build 110 mi. of line to serve 300 customers; The Whitman County Rural Electric Cooperative, Colfax, Wash., $200,000 to build 208 mi. of line to serve 680 customers.

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HARDWARE DEALERS of the Pacific Northwest, convening in Spokane last month, heard C. J. Galloway of the Washington Water Power Co. outline the excellent prospect for sales in the rural market. Electric pumps and cellar drainers, he said, should move easily during the next few weeks because of the probability of floods as the heavy snows melt. The hardware men devoted one entire session to a discussion of major electric appliances. In addition to water pumping systems, electric garbage incinerators were given considerable attention.

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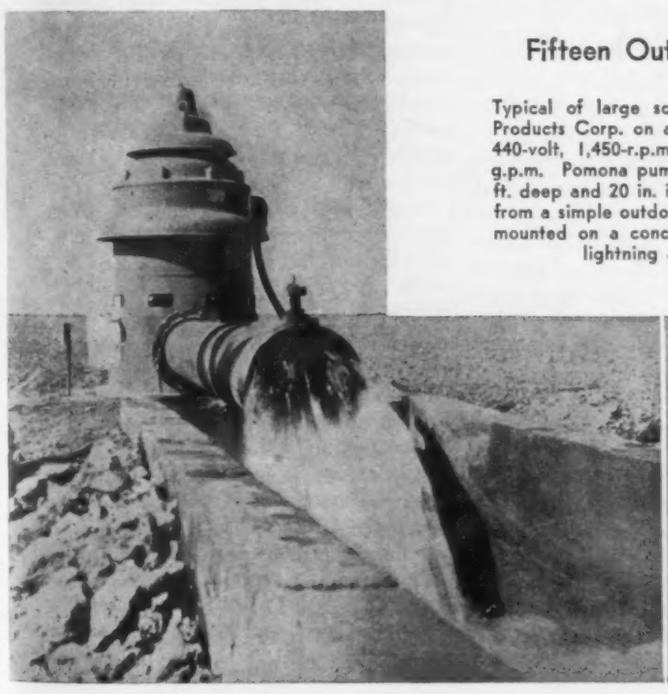
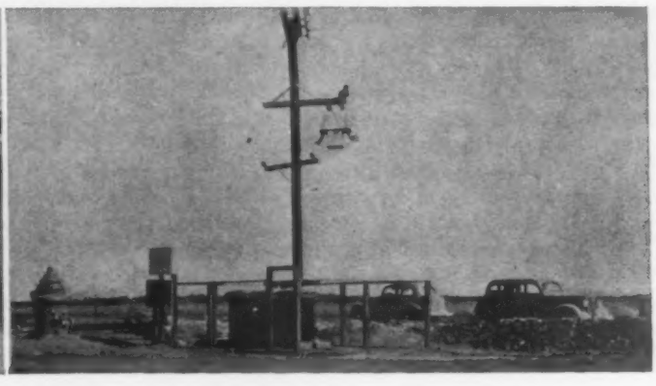
TO PREVENT CRUSHING of baby pigs by the sow, electric brooders have been reported highly successful following tests conducted by the University of California College of Agriculture at Davis. J. R. Travernetti, agricultural engineering division, reported: "Loss from injury by the sow during the first week after farrowing is a serious problem. Although the electric brooder was developed mainly to attract the pigs and reduce this loss, it also keeps them from becoming chilled." Two types are used: the radiant hover costing about $5; the underheat floor warmer, $10. Labor is not included in these estimates. Operation costs are from 65c to $1 for a 10-day period, and construction and operation average 50c to 75c per litter.

Fifteen Outdoor 100-Hp. Pumps Irrigate 10,000 Acres

Typical of large scale irrigation operations is the installation of the Arizona Farm Products Corp. on a 10,000-acre cotton ranch near Phoenix. Fifteen 100-hp., 3-phase, 440-volt, 1,450-r.p.m. 25-cycle Westinghouse hollow shaft vertical motors drive 2,500 g.p.m. Pomona pumps equipped with water lubricated rubber bearings. Wells are 450 ft. deep and 20 in. in diameter. Water lift is 140 ft. Each pumping station is supplied from a simple outdoor 6,600/440-volt substation consisting of three 37.5-kva transformers mounted on a concrete base with the necessary outdoor protective devices including lightning arresters. The substations cost approximately $2,500 each.





Electra's Husband

How the Economy is Planned

DEAR ELECTRA: You may be thankful that your husband has never had any political ambitions. I never will forget your railing and ranting about my attendance at conventions after you saw that memorable movie, "Convention City." Well a smart producer is going to film a picture called "State Legislature" some one of these days and a lot of wives are going to keep many so-called politicians at home.

Little did I reckon when I started on this trip that I would put in a night like last Friday. But then I should have remembered that the Legislature would be in session when I scheduled my stop at the capital of this wild and wooly Western state. It served me right, picking the hotel I did.

Well the party in the room across the hall started about 6 p. m. From then until 2:30 a. m. it became increasingly riotous and raucous. The rising tempo of feminine giggles and screams and coarse male laughter and shouts was accompanied by an almost continuous parade of bellboys carrying ice and mixing ingredients. The blast of noise as the door opened to the insistent knock of the bellhop was like giving a quick twist to the volume control on the radio; it drowned out the tinkle of ice and bottles and glasses on the loaded tray. Even worse was the crescendo of mixed sounds when new visitors arrived or convivial guests departed.

Naturally sleep was impossible and I'll frankly admit that I did not get much good out of the several chapters of Lawrence's "Seven Pillars of Wisdom" that I attempted to read. Finally the desk clerk or manager or someone came up and put a stop to the party. I was sorry because it had reached a stage where anything might have happened, particularly a good fight. How do I know? Well here is the windup, after all of the guests but one had departed. I repeat the conversation from memory.

"Say Bill, who was that little guy with the black mustache that made such a play for Mabel?"

"I don't know for sure but I think he is a new assemblyman from down in Cow county. He's never been up here before."

"Well he's a dirty cheap little ... . trying to steal my girl! See you in the morning."

"Good night."

Why do I tell you about this? Because the next morning I read a resume of the bills which had been introduced up to that point in the session. What these playboys proposed to do to the business which gives you and me our livelihood is enough to make your blood boil. Here are some of them: a bill creating a state water and power authority with broad powers to take over or compete with the private power companies; a state revenue bond proposal permitting any political subdivision to issue revenue bonds to engage in the utility business; a measure authorizing REA cooperatives to issue revenue bonds; a bill requiring the reporting to the state regulatory body of all utility salaries in excess of $5,000; an act prohibiting the inclusion of a service charge in rates for electric motors; a measure declaring unlawful any utility charge which is "unjust or in excess of the value of the service rendered."

You know Electra, these legislators and their regard for the rights of business remind me of the story of the fellow who was trying to get his friend to go into partnership with him in the steamship business. "You supply the boats and I'll furnish the ocean" was the gist of his proposition.

Your loving husband.

P. S. Remind me to tell you about the twosome in the room next to mine the night of the party. Uncle Sam might complain if I sent the description through the mails.

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WELL Electra is half way convinced. The 32 electrical appliances she has in her home compare favorably with the average of 26.5 for electrical people generally as revealed by the returns from the questionnaire which this columnist (?) ran in January. She has also agreed to make the icebox cookies.

These incidentally will be sent to a tall, gangling, half-bald Scotch general sales manager of one of the prominent Northwest power companies. This Scot, who was in at the birth of electric range merchandising and has an uncanny faculty of dropping a *sotto voce* aside at a committee meeting which sets all the animals howling at once; reports a total of 48 appliances in his home and an astounding average monthly consumption of 1,008 kw.-hr. Electra wants to know what he does with that much electricity. I can't tell her because from his report he does not heat his house electrically. It's probable that he and his family simply get the ultimate in comfort, convenience, cleanliness, safety, labor-saving and pleasure that comes with a full use of electric power and its many servants. At any rate, he would be our entry in a sweepstakes confined to *executives only* to determine who is the best customer for his own wares.

Electra got some funny ideas from the coupons which came back. Left off the published list of appliances were aquarium heaters, workshop, stoker, and oil burner—all of which were reported in the returns. Now she wants to raise tropical fish simply because I had to explain to her the purpose and use of an aquarium heater. And she insists on a trip next summer to Carlsbad Cavern because one chap in New Mexico (he must be sales-minded) included a direct mail circular on that wonder work of nature in the envelope with his coupon.

Random impressions from the returned questionnaires : A utility man in Idaho with 29 appliances, using 470 kw.-hr. said, "And believe you me, if I could get a half-cent rate for all over 500 kw-hr., I'd heat the house electrically." . . . From another, "average gas bill $0.00" . . . "Shouldn't count milk warmer for two boys are 15 and 20 and weaned." . . . Only one air conditioning installation reported (in the home of a manufacturer) . . . Two reports of monthly consumption exceeding 600 kw.-hr. with no air heating, one from a consulting engineer. . . A sales-minded engineer who reported average consumption for nine years of 123 kw.-hr. per month with no range, refrigerator or water heater.

Thus Electra's little excursion into the realm of advertising proves that some people in the industry use enough of the product to sell it with confidence and conviction. If you have less than 26 appliances in your home, you are below the average. If you have more, it is a certainty that you believe in your own goods. You can do yourself and everyone else in the industry a lot of good if you tell your friends that electric power is the lowest-priced and most efficient servant in your home.

Trade Associations

IDEAS AND PLANS WHICH WELD THE INDUSTRY INTO A UNITED ATTACK ON PROBLEMS IN TRADE RELATIONS AND BUSINESS ETHICS

Strong Program Planned for Contractors Meeting

UNIFORM wage rates, the Federal Trade Commission case against the wire manufacturers, proposed amendments to the contractors' license law, and a visit from Earl Peak, national president, will feature the meeting of the Northern California Electrical Contractors Assn. in Fresno, April 10. Arrangements are already being made, according to Frank Boyd, Pacific Electric Motor Co., Oakland, president of the association.

Earl Peak, president, National Electrical Contractors Assn., will be present to discuss with the California members the proposed new constitution and by-laws and to discuss the entire question of national dues.

After prolonged discussion and reports from executive committee members from various regions in northern California, the Northern California Chapter, National Electrical Contractors Assn., decided to revoke its chapter charter and leave to individual contractors the decision as to whether they would continue to be members of the National Electrical Contractors Assn. at large. A special called meeting of the executive committee Jan. 21 reached this decision after careful inquiry into members' ability to pay the new scale of dues announced by the national association.

Roy Butcher, electrical contractor, San Jose, and chairman of the State Contractors License Board, will discuss the proposed amendments to the state Contractors License Act.

Dan Bronson, California Electric Co., Ltd., Oakland, will review the cease and desist order of the Federal Trade Commission against the National Electrical Manufacturers Assn. on wire price maintenance.

A part of the discussion will be given over to the subject of uniform wage rates and labor charges. Likewise, discussion will include the subject of incorporation versus partnership as a form of business organization for contractors.

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G. E. KRITZER recently was elected president of the Electrical Estimators Club, Los Angeles. Mr. Kritzer is a member of the service staff of the Bureau of Power & Light, Los Angeles. The Estimators Club continues to meet each Thursday noon at 1401 South Hope St., discussing installations, methods and materials.

A. E. Tracy, Redlands meeting host

Two Inspector Meetings Discuss Problems

Two meetings of the Southern California Chapter, International Assn. of Electrical Inspectors, one in Redlands, the other in Huntington Park, have marked this group's progress since the convention last September. At the last meeting in Huntington Park, the successful year of Otis Newcomb, Long Beach electrical inspector, chairman during the past year, was commended and G. E. Price, county electrical inspector, Orange County, was elected chairman for 1937. H. G. Ufer, secretary, was re-elected.

Appropriately, the paper prepared by W. J. Trethaway, Huntington Park inspector and host of the meeting, was discussed at length. Mr. Trethaway first presented the paper at a chapter meeting last year, revised it, and presented it at the Southwestern Section meeting. At the Huntington Park meeting R. H. Manahan, chief, Department of Electricity, Los Angeles, made it the subject of special comment.

Further reports on ocean air metallic corrosion by G. E. Price and H. V. Dobson, Santa Barbara, were heard. Extensive discussion of inspector problems came up at both meetings. The value of such discussion is the exchange of experiences. Among matters of particular concern lately have been accidents caused by electric fly traps and fly screens, and electric fences.

F. Van Gilluwe, Holophane company, discussed inbuilt lighting fixtures at the Redlands meeting; W. J. Wilt, Bussman Manufacturing Co., spoke on "Non-Tamperable Fuses" at the Huntington Park session.

●

Construction Group Plans Contractor Act Changes

Convening under the auspices of the legislative committee of the Contractors' State License Board, representatives of the construction industries of the state of California met in Fresno, Jan. 9 and 10 and completed plans for the industries' program to amend and strengthen the contractors' license law.

Planning to add new grounds for suspension of licenses, the Council agreed to seek reduction of the $200 exemption clause to $50, the removal of the exemption allowing contractors to undertake work in agricultural regions without a license, and the requirement that new applicants for licenses must have had four years experience in the construction business, and must pass a non-technical examination.

●

Voluntary Code Started by Los Angeles Group

The Electrical Contractors Assn. of Los Angeles held a very successful dinner meeting Feb. 11 at the Rosslyn Hotel. More than 70 electrical contractors were present.

Dr. Chas H. Cunningham, district director, Federal Social Security Act and R. H. Harnish, district supervisor of the California Unemployment Reserves Commission, gave instructive explanations of the provisions of these acts. The questions asked indicated that much information on these two laws is required by Electrical Contractors.

Mr. J. E. Chandler told the guests about a recent trip he made to the Eastern and Southern parts of the country to gather information as to the operation of Codes of Fair Competition. He found many groups operating under various modifications of the plans suggested by the National Association. In every instance members of the Code groups are benefited by establishing more equitable prices for their work. Such a group has recently been organized in Los Angeles and is incorporated under the name of Electrical Contractors' Council. This group confined its attention largely to the public works program but is now expanding into the private work.

Mr. Harry W. Biddle, Biddle Trade Bureau, addressed the meeting on the legal aspects of such organizations. He pointed out that the citizens of California are fortunate in having well established statutes under which such Trade groups may legally act, the only requirement being that prices established by such organizations must be reasonable. "It is to be regretted that advantage of these statutes is not recognized by more men in the industry," Mr. Biddle said.

EDITORIAL

Pooled Power

ECONOMICALLY, system interconnection is justified by the emergency or standby capacity it makes available, by the ability to give customers in another area the benefit of low cost generation elsewhere or by the improvement in system load factors whereby investments in generating facilities are kept at a minimum. That western utilities have long capitalized upon these factors is evidenced by the use of system ties and is reflected as one of the factors which permit the low rates enjoyed by western consumers. It is quite possible to operate the San Diego system in synchronism with the Montana Power Company through system tie lines in California, Oregon and Washington and Idaho.

This fall the wisdom of maintaining such facilities was demonstrated. Unusual drouth coupled with record demand in Montana depleted hydro-plant reservoirs and made it necessary to take power into that area from Washington Water Power. The latter company ordinarily supplies power to the Pacific Power and Light Co., whose own hydro plants also felt the effect of the water shortage, making it necessary to make up the deficiency from steam plants of the Northwestern Electric Co. Portland General Electric's and Puget Sound's steam plants were placed on base load operation conserving water for peaking. As the Oregon area also was enjoying record demands, additional power was made available through the interconnections from Portland south. Power from the California-Oregon system, ordinarily pumped into the northern terminus of the Pacific Gas and Electric Company, was relinquished by the latter and sent northward into the Mountain States system.

The foregoing is an excellent sample of the good engineering, good management and sound investments that have been made by the utilities in the effort to serve well at a low cost. By pooling generating capacity, these companies not only were able to meet a record load but also supply deficiencies in normal production. A small percentage of steam plants and a modest investment in system tie-lines made a pool of the reserve capacity of a number of systems available at the most needed point and eliminated the duplication of investment necessary had each company had to prepare to meet all demands without help from its neighbors.

Too few of our customers realize how well the utilities safeguard their interests in the matter of minimizing investments in this way. For instance, the Idaho Power Company has announced the construction of a new hydro-electric plant together with the significant statement that its output will be sold to a neighboring utility for two years when it is anticipated that load growth on the Idaho system will require more generating capacity. Still another example is the new interconnection between Pacific Gas and Electric Co. and the Big Creek plants of the Southern California Edison Co., Ltd. Indirectly, power generated from the stored waters of the Colorado River watershed may release capacity on Big Creek for use in northern California.

Those who advocate state grid systems and various "power authorities" fail to realize that mere interconnection does not imply economy for the consumer. Interconnections must be planned in the light of future power developments and coordinated with the potential power producing ability of each area. Only as the interconnection makes possible greater usage from existing facilities does the customer benefit. Utility management here in the West not only has gone far toward the utilization of the economics of interconnection, but also has passed on to its customers the savings thus obtained in the form of continuous rate reductions and more-than-adequate service.

Keep the House in Order

FORTUNATELY for the electrical industry there has been no labor strife within its ranks to mar its record of recovery. Penalties have been inflicted on all branches by the maritime strike here on the Pacific Coast, just as in other sections of the country industrial shutdowns have adversely affected electrical business. The wholesalers have watched strikes close warehouses in other lines, but they have thus far staved off trouble by putting their own houses in order.

Can the industry continue to function without a break in the relations between employer and employee, particularly in view of national developments? Obviously employer and employee relations no longer are being shaped wholly by individual employers and their employees. Creation of a national government labor policy pampered by legislation and fostered by political vote-getting is challenging employer leadership and fomenting industrial strife. While economists claim that strikes are complementary to business recovery, never before has there been such an accord between government and labor as that which has developed during the last three years. That this will be accelerated during the next year or two is a real possibility. Thus external factors are having an increasingly important bearing

on employee relations. No individual business is too small or too remote to remain wholly clear of this new pressure.

In the face of this new development, management ought to give even more attention to its own internal situation as well as to keep fully posted on outside factors. Fact must replace theory and action forestall trouble. As one enlightened executive points out, affirmative answers must be given if the following questions are asked. Are employer-employee relations mutually satisfactory? Are they cordial? Does mutual trust and confidence exist? Are these relations based on sound and well defined principles or on opportunism and expediency? Is employee morale high? Are these relations threatened by external influences? If analysis reveals weak spots, then management should take the initiative in remedying them. Once the house is in order, the trouble maker and agitator will find himself set upon by the entire family if he attempts to force an entrance.

Hijack

BUSINESS for the electrical industry approaches boom proportions again. If the industry could only devote itself to its business, that of service to the public, there would come an era of good will and good business in which public and industry alike might share.

But blessings are seldom unmixed. A veritable riot of politics has been aroused. The news is filled with cries of "crucify the utilities!" The President's overwhelming victory at the polls has been seized upon by every limelight seeking office holder or political aspirant, swept into political power in the wake of the President's popularity, as a cue to a mob-like frenzy against business in general and private utilities in particular. Politicians who had never been successful in any enterprise save that of gathering votes on promissory notes are now bent on hijacking the property and the success they never could have created themselves in order to pay up on their promises of utopia.

Job's plague of boils was as nothing compared to the rash of intemperate legislation, criticism, lust for vengeance or destruction, and downright dishonest intent to steal that is being voiced by these "saviors of the People" from every legislature and congress.

Truly the outlook on the emotional front is 180 degrees apart from that on the business front. The industry, in 1937, must keep the worry which this blind and unjust fury engenders from becoming a millstone about the neck of its enterprise. This period ahead, until the people learn to judge their best friends by deeds instead of dreams, must be a trying one. It will call for unremitting public service as proof positive that those who have been schooled and raised in a tradition of public service are best able to render it in the future. It will be a test of intestinal fortitude the like of which all the electrical industry's past has never known.

Minimum Users by Choice

AS more and more study is being given to the problem of converting the so-called minimum customer from a liability into an asset to the industry, some startling facts are being revealed. One of these is that in only approximately half of the cases does ability to buy either additional kilowatt-hours or additional appliances have any bearing on the low consumption of minimum users.

Here are some discoveries made by one utility in this region whose record of load building and of average domestic consumption have won recognition. Thirty-four per cent of its residential customers never break over into the second step of the rate schedule. To them electricity *is* expensive for they pay 5.5 cents per kw.-hr. in the urban districts and 7 cents in the rural. The average rate of 3 cents which applies for all residential consumption on this system is meaningless to them. Further checking of these customers, however, brought to light the fact that more than half of them were perfectly capable of using more electricity. For instance there was the home of a local banker where one I.E.S. lamp was carried from room to room to provide adequate lighting. The average bill was $1.50 per month. In the home of a leading insurance broker, the housewife moved from room to room after her guests turning out the lights and condemning the power companies because electricity was expensive. And these were not exceptional cases. In hundreds of better class homes the only conveniences that electricity brought were lights and the operation of one or two appliances.

Despite all of the promotional efforts of the industry, its advertising and its salesmanship, these customers harbor a cost complex, using electricity as a bare necessity, knowing nothing of the comforts and pleasures which would be brought into their homes with refrigeration, laundry equipment, or electric cookery. They are the chronic kickers over high rates. But they are prospects as well. They have the ability to buy, but not the urge.

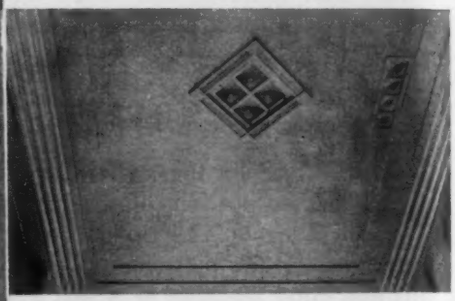
So in discussing the minimum customer and what to do about him, the industry cannot overlook the fact that some of these customers are in the minimum group by choice and not by economic circumstance. They may be tough prospects but just as long as they use a minimum amount of electricity they represent a challenge to the industry's salesmanship.

Pictures Bespeak the Electrification of the

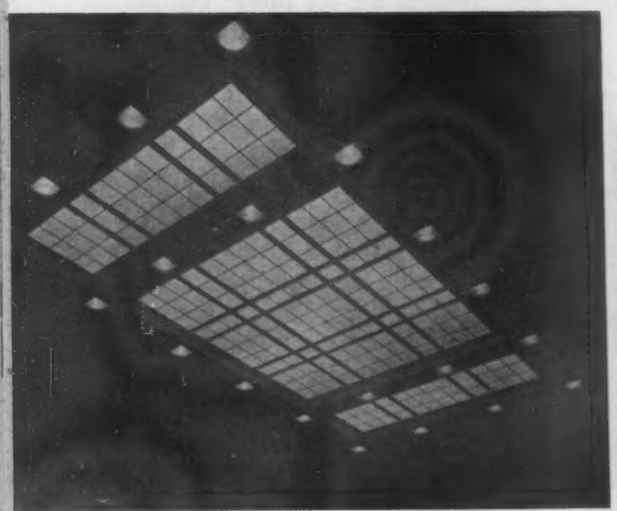
New Alameda County

Distinguished by inbuilt lighting, individual courtroom air conditioning, provision for sound, Architects Corlett, Plachek, Minton, Schirmer and Werner, Consulting Electrical and Mechanical Engineer G. M. Simonson, and Electrical Contractor Roy M. Butcher provide Alameda county, California, with a thoroughly modern public building

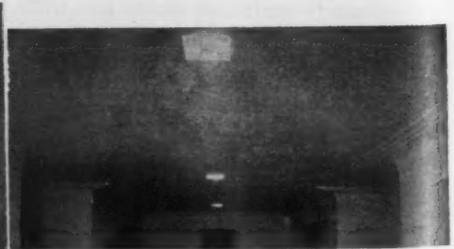
Left: Down main corridors groups of four 150-watt, 8½-in. lens are mounted in a straight line. Note absence of ponderous hanging fixtures. Below: In entrance lobby 4 lens are grouped in a square. The four in a strip light a wall mural



Below: Over elevator entrances two 4 x 6-in. control lens, with 60-watt lamps, place light at the elevator step on the floor

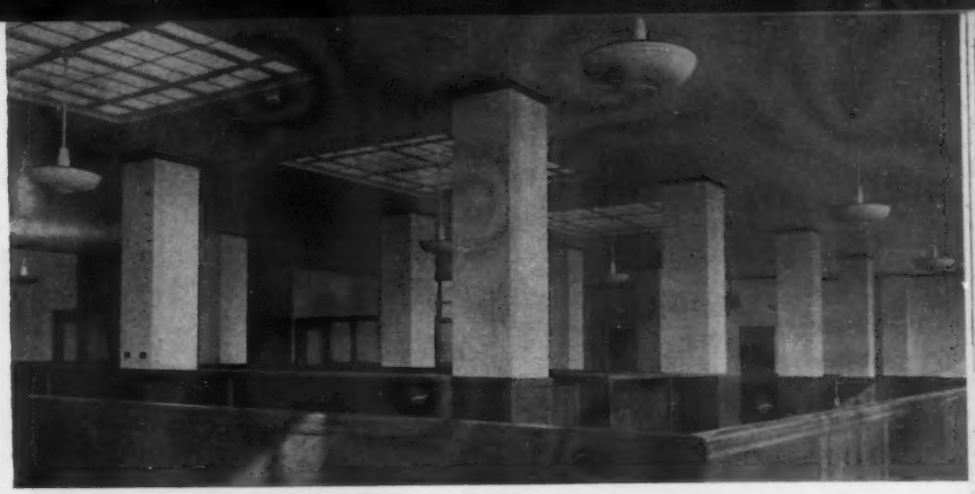


Above: Around the skylight frame in the Supervisor's chamber are 12-in. lens, with 200-watt lamps behind each, grouped on wall switches so that pattern of the ceiling is maintained with part or all units on. This room receives 18 ft. candles at desk level



Above: Hall lighting on typical floors employs 12-in. lens, built flush to the ceiling, lamped with 200-watt lamps and prismatic reflectors as shown in center picture. In the lower picture is shown a low ceilinged intermediate floor hall lighting. Hall lighting is controlled from the basement panelboard in a two general groups, one of all night lights, the other of general hall lighting

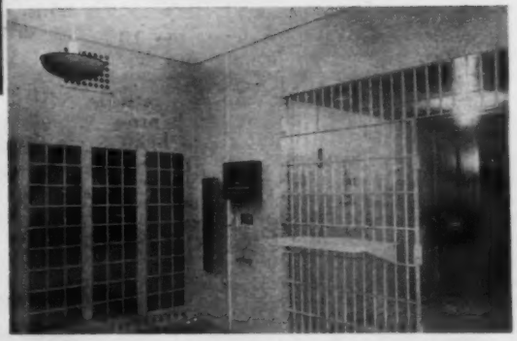
Court House

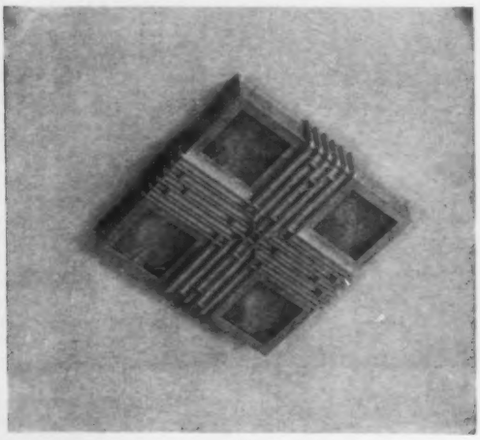


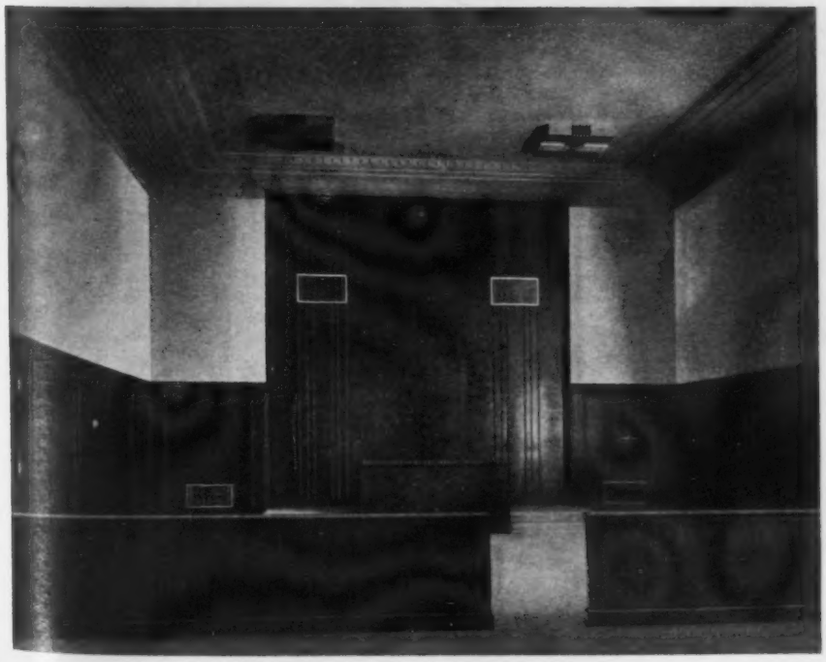
Right: Typical office lighting; 750-watt indirect units in each 216-ft. bay, or 3 watts per sq. ft. In this office, type of skylight glass was selected to minimize sun glare, reflect all but 20 per cent of the artificial light

Above: Law library, and at left, stack lighting of special Asometrical units. Library lobby ceiling contains banks of three 200-watt lens units, producing 18 ft. candles at desk level

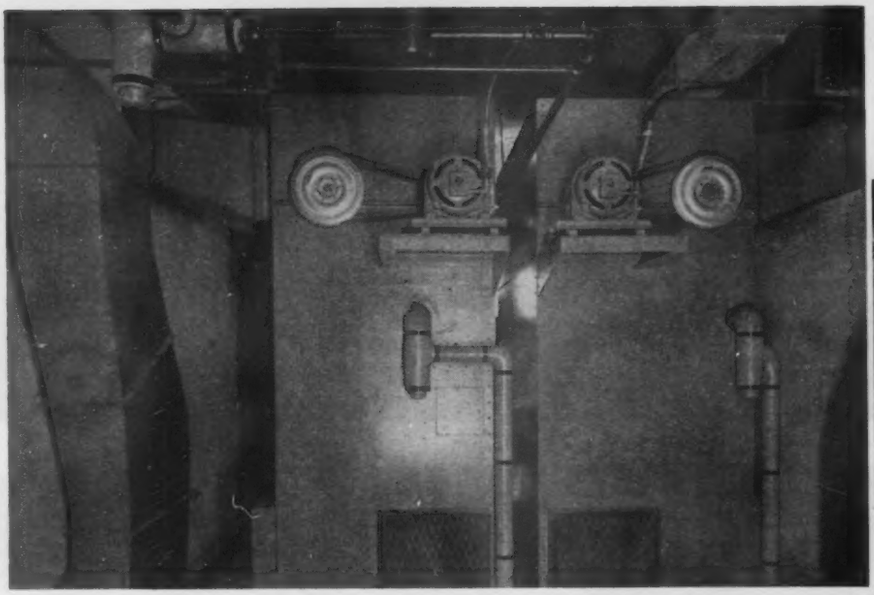
Above: Jail cell 60-watt unit, lamped from rear corridor. Right: Jail office on 10th floor where lighting and intercommunicating phones are controlled. A special elevator connects to jail entrance on ground floor





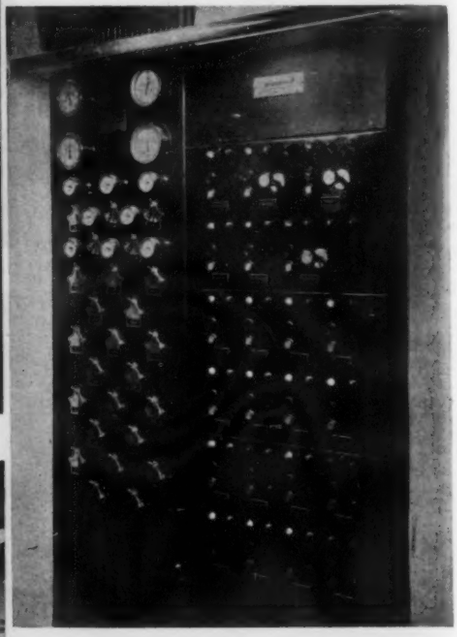


Left: Each of 10 courtrooms has six ceiling panels (shown above in detail), each containing four 200-watt control lens and prismatic reflectors. Flashed opal glass between the cast aluminum grills and over the sides of the unit are lighted from spill light. Control is arranged at the panel for units in groups of two, so that just those over the judges' bench may be lighted if needed. Air conditioning grills are shown at left. Courtrooms are equipped with pipe for future sound installation of deaf sets or reporting system



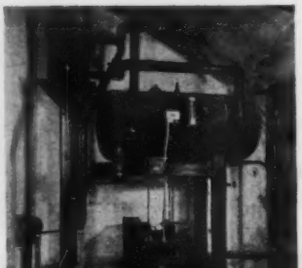
Typical layout of two individual courtroom air conditioning systems

Below: Air conditioning control panel in basement. Both supply and exhaust motors are interlocked and so must run at same time and speed or both stop. All control is centered here

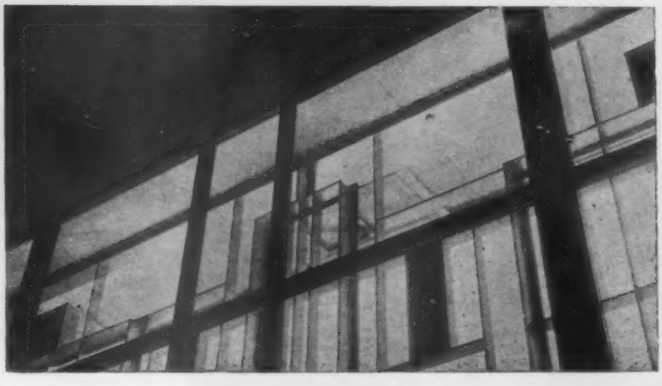


Refrigerated water for air conditioning is supplied from the three 21 ton 6-cylinder Westinghouse compressor units at left, and piped to individual courtroom ventilating systems. Below a separate chilled drinking water system

With a total of 22 fan systems, the 10 courtrooms, supervisors room, and law library have individual air conditioning systems. Elimination of long air ducts, plus individual courtroom control, is provided by central refrigeration and heating. Courtrooms are located on 3rd, 5th and 7th floors, each courtroom being two stories high. Air conditioning units are located on intermediate 4th, 6th and 8th floors, over courtroom lobbies, immediately adjacent to their courtrooms. Fresh air is drawn in through screened windows; exhausted air goes out at the roof; dampers provide for recirculation. All control is handled at the basement board. Westinghouse voltmeter selector switches control speeds of the two- and three-speed ventilating units. Exhaust and supply fans are electrically interlocked and both go out together in case of trouble, ring an alarm and cannot be restarted except by toggle switch at main board

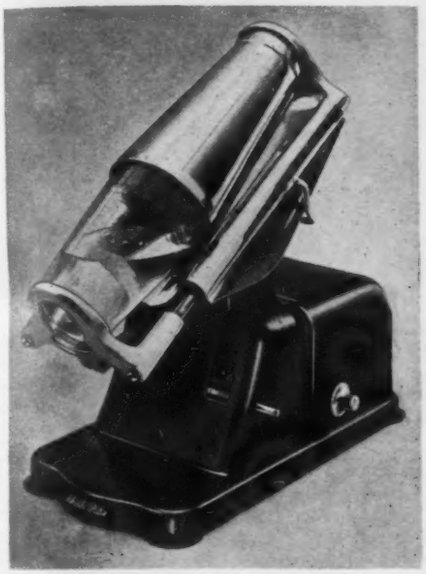


Entire building employs nothing but circuit breakers. Even the main switchboard uses Deion circuit breakers, as shown in above opened panel. Main switches are carbon type air circuit breakers



Left: An interesting detail of lighting. In the high soffit over the main entrance windows are mounted two flush 150-watt control lens which punch light down on the entrance steps. Spill light brings out ornamental grill detail. Step lights of similar character light entrance stairs. Conduit is provided to 287 capped outlets on the tower, first, fourth, eight and tenth floors for future flood-lighting

New Products Display



Cocktail Shaker

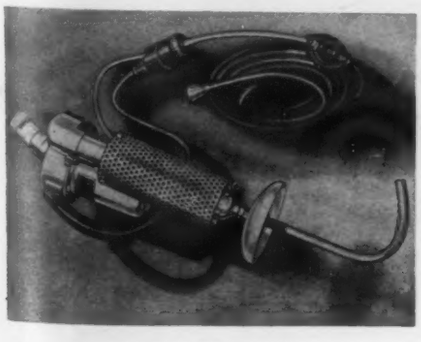
Were honors accorded a "gadget of the year," the electrical cocktail shaker, which appeared last fall, would enter a strong bid. This device uses the accepted type of equipment, produces the accepted motion. An automatic control sets the electrical barkeep working for from 3 sec. to 30 min. It is called Shak-Rite. Walter Welting, Inc., 867 N. Sangamon St., Chicago.

Heat Indicating Paint

One of the trickiest innovations is a paint that changes color when exposed to heat. A series of five permanent changes and seven retroactive color paints are available. The former change at temperatures ranging from 300 to 734 deg. F., the latter from 104 to 464 deg. F., with a 25-degree safety margin. The retroactive colors are good for 25 to 50 changes before recoating. Useful on any equipment where warning of temperature change is desired, they find electrical applications in wiring, brushes, bearings, transformers, etc., etc. The Efkalin Co., 804 E. 141st St., New York.

Heat Gun

An electric heat gun for service stations and garages, combining an efficient electric heater and a hand vacuum cleaner, has been announced. The heater unit attaches to the exhaust orifice of the cleaner and offers a simple, practical method of thawing out transmissions, differentials, carburetors, radiators, and for drying out wet ignition systems. Net price to the trade is $18.00, including all attachments for heating and vacuum cleaning. General Electric Appliance and Merchandise Dept., Bridgeport, Conn.



Vib-Ray-Ped

Ready for national distribution is a device designed for the relief of tired feet. Called Vib-Ray-Pad, it combines mechanical vibration with infra-red radiation. Mechanism, consisting of a rubber mounted motor, driving roller bearing discs, is contained in a mound-shaped bakelite case. It is equipped with an extension cord for plugging into the light socket. Vib-Ray-Ped Sales Co., 629 W. 9th St., Los Angeles.

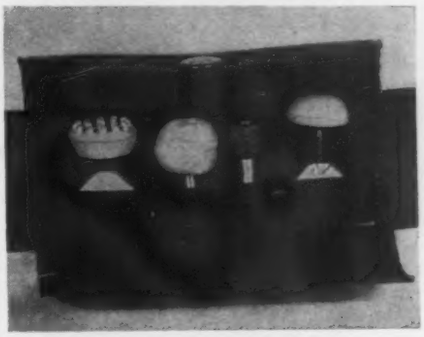
Sidelines

Electric Hairbrush

Described by its manufacturer as "the guaranteed new way to remove dandruff and grow hair," is the Sur-Way electric hairbrush. It plugs into a standard socket, and through a variable control energizes a brush. Thompson Manufacturing Co., 1517 W. 7th St., Los Angeles.

Shaver Accessories

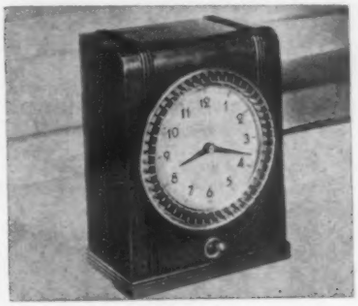
Given a source of power, applications follow quickly. Such is the case with Packard Lektro-Shaver. Contained in a kit are an emery nail filer, felt nail buffer, facial vibrator, and scalp stimulator. They are attached with an accessory head, which replaces the shaving head. Also available is a hair-cutting head. Progress Corp. 1 E. 43rd St., New York.



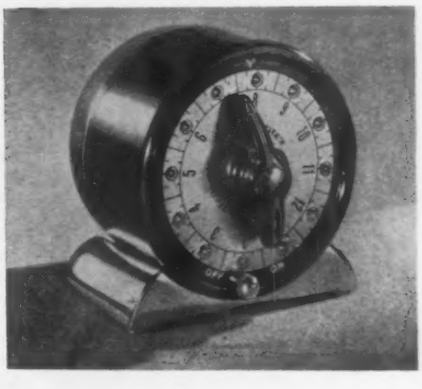
Home Controls

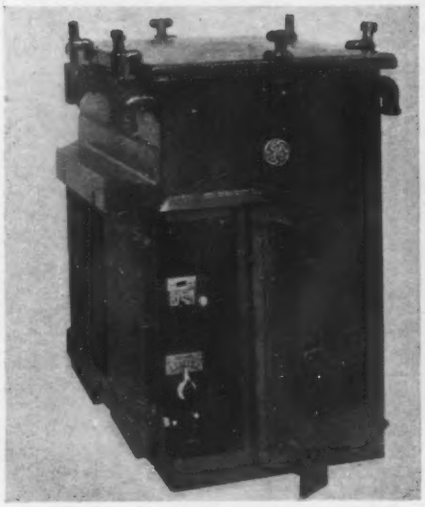
To make home appliances super-automatic is the purpose of a variety of devices designed to keep track of time, to control conveniences accordingly. Among newest designs are:

The Organizer—This timepiece divides the 12-hour day into 48, 15-min. periods. It has a key for each. When a key is pulled out, the current will be turned on during that period. Pulling two or more adjacent keys will give continuous operation for those periods. It is especially adaptable to control of radios. An outlet at back accomodates the plug from an appliance. Warren Telechron.



Household Watchman—Adjustable for turning on current at any single predetermined time for any interval is this Mark Time model. It is housed in brown bakelite, has a chromium face. M. H. Rhodes, Inc., New York.





Voltage Regulators

A new line of improved branch feeder step voltage regulators designed for use on 2.4, 4.8, and 6.9-kv. circuits, consist of an auto-transformer connected to a two position oil immersed contactor which is actuated by a resonant relay control. The contactor is solenoid operated and is returned to the no boost position by a tension spring in addition to gravity. To provide a path for load current during the brief switching interval, a thyrite bypass is connected in parallel with the contactor. Full load current passes through the solenoid bypass during switching, thereby providing continuity of service. The unit is available in ratings from 5 to 50 kva. General Electric Co., Schenectady, N. Y.

●

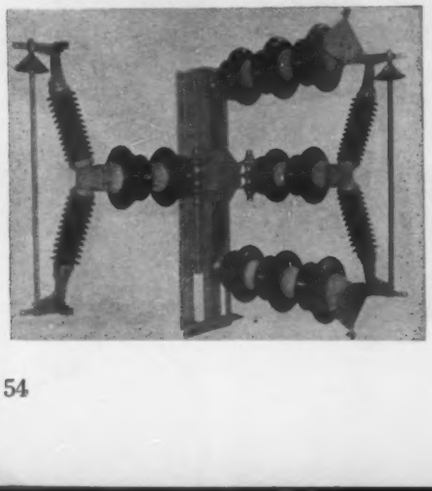
Indicating Primary Cutouts

For use on distribution circuits a new porcelain-housed primary distribution cutout is available. The fuse holder, mounted on the door of the cutout, engages contacts in the main housing. When the fuse blows, the outer tube of the fuse holder drops through an aperture in the bottom of the housing providing visual indication of trouble. W. N. Matthews Corp., St. Louis, Mo.

●

115-Kv. Fuse Mounting

A new design of 115-kv. fuse mounting permits manual or automatic refusing of high voltage circuits. The mounting consists of two stationary insulator stacks and two sets of independently-controlled, centrally-located insulator assemblies swinging expulsion type fuses in a horizontal plane. Normally one fuse is connected as shown in the accompanying illustration and when blown is disconnected and a new fuse inserted in the circuit by a standard switch mechanism either manually or automatically through the use of motor or spring operated mechanisms operating in conjunction with proper relaying. Delta-Star Electric Co., Chicago, Ill.



Rugged Suspension Insulators

An insulator, especially designed for line sections where shooting or rock throwing are experienced, is made without petticoats, the smooth lower surface tending to deflect rocks or bullets with less damage to the insulator. It is available with 10-in disks for both 5- and 5¾-in. spacing with a choice of either ball and socket or clevis attachment on the 5¾-in. spaced unit. The 5-in. spaced unit is made up for ball and socket attachment only. Ohio Brass Co., Mansfield, Ohio.

●

Two-element, Single-disk Watthourmeters

All of the major meter manufacturers have announced newly designed two-element, single-disk watthourmeters suitable for 3-wire or polyphase service. These new designs are available for conventional mountings or for socket-type, new sequence installations. All incorporate temperature compensation and high accuracy at loads above rated capacity. Sangamo Electric Co., Springfield, Ill.; General Electric Co., Schenectady, N. Y.; Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., and Duncan Electric Co., Lafayette, Ind.

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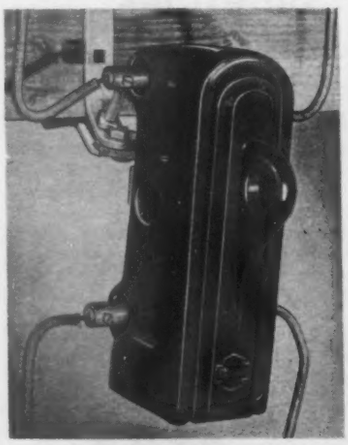
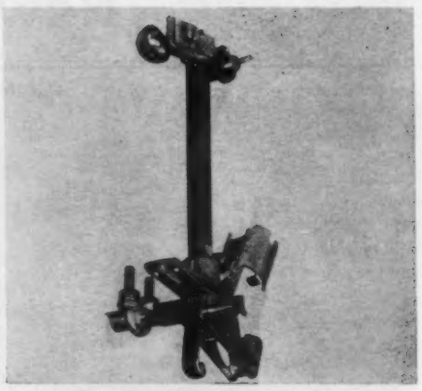


Sectionalizing Cutout

A new Tripomatic sectionalizing cutout for automatically isolating loop circuits in series street lighting systems, when an open occurs in the loop, is a recent development that has been introduced to power companies. The cutout is essentially a two blade disconnecting switch which operates in sequence with an auxiliary switch. When the loop switch opens, to isolate the loop, the auxiliary switch closes automatically to provide a straight through connection in the main circuit. The loop and auxiliary switches are restrained in their normal operating position by a 3 ampere or less fuse link used in conjunction with the conventional Tripomatic trip out mechanism. James R. Kearney Corp., St. Louis, Missouri.



Rural Line Cutouts

To assist in the development of low cost rural distribution two line suspension fuse cutouts have been announced, one type of which clamps on the line by the conventional hot line clamp and the other snaps on (illustrated). Both types are provided with a lower terminal and indicator but can be furnished without them where desired to have the cable portion of the fuse drop clear of the cutout and thus isolate the fuse tube The line suspension fuse cutouts are available in ratings at 30 amp., 8,000/13,000 volts Y. General Electric Co., Schenectady, N. Y.

Apparatus

Cable Locator

A new portable instrument locates cables, measures their depth and permits accurate mapping without electrical contact. Known as the "M-scope," it consists of a special radio transmitter and receiver mounted at opposite ends of a portable frame. The operator, by means of variations of signal strength in the earphone which he wears, can determine both the location and depth of the cable by walking across it or can trace it in direction by following the line of maximum signal strength. The unit is extremely portable, weighing but 22 lbs. with its case. Fisher Research Laboratories, Sales Co., 45 Rockefeller Plaza, New York, N. Y.

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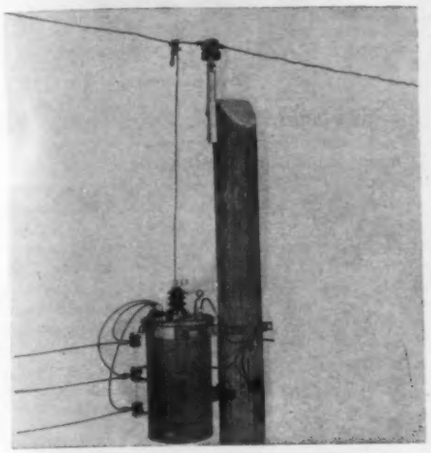
Rural Line Transformers

A self-contained, low-cost transformer, designed particularly for reliable service on rural lines, contains its own horn gap, secondary rack and pole clamp as an integral part of the unit. A fuse at the base of the bushing inside the tank protects the transformer in case of internal short circuit. The transformer is available in sizes from 3 to 10 kva. and in the voltage range between 6,900 and 13,200 volts. Wolff Electric Works, Inc., 233 N. W. Ninth Ave., Portland, Ore.



& Equipment

Small Cable Stop Joint

A new stop joint for 69-kv. oil-filled cable applications serves the dual purpose of splicing together lengths of hollow core, oil-filled cable and provides features for the control of internal pressures on the cable oil. It is smaller and less expensive than its predecessors resulting in a greatly improved economy on the cable line and saving in manhole space. The new joint has a high strength and is easy to install. General Electric Co., Schenectady, N. Y.

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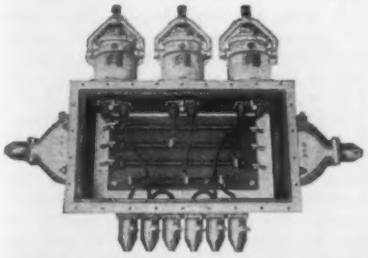
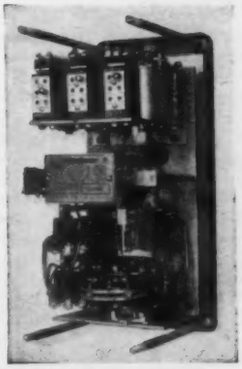


Combination Underground Unit

A subway cable box with oil fuse cutouts mounted as an integral part of the unit is now available. A three-conductor main cable is carried straight through with the conductors solidly connected to busbars within the box. Branch connections are tapped off the busbars and connected through oil fuse cutouts. Six separate wiping sleeves on the bottom slide of the box facilitate making connections to a delta connected transformer bank. The unit is available in ratings up to 5,000 volts, 200 amp. maximum. G. & W. Electric Specialty Co., 7780 Dante Ave., Chicago, Ill.



High Speed Distance Ground Relay

Identified as the Type HX relay, a new development provides extremely sensitive and selective fault protections with a minimum of time delay and accurate distance measuring. The operating mechanism consists of three distance elements, one directional element and a synchronous timer connected to give zone-type time-distance characteristics. The unit will provide selectivity between circuit breakers without the use of increasing time settings of relays and thus can be used on single lines, closed loops or on parallel lines with equally satisfactory results. Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pa.

●

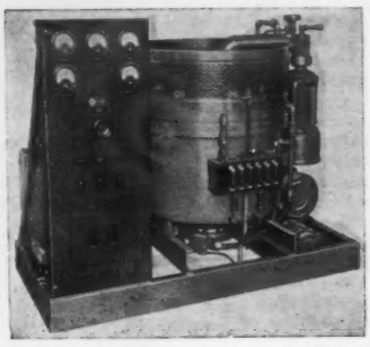
Silentype Insulators

A pin-type insulator designed to prevent the generation of radio interference and identified by the trade name Silentype, is announced by the Ohio Brass Co. Incorporating all the reliability of the standard insulators, the Silentype design includes a metallized head obtained by a special process of plating the metal to the insulator glaze. The metal plating, providing a smooth surface for both conductor and tie wire extends well out toward the edge of the unit, the plated area being slightly undercut. Air spaces in the pin hole have been eliminated by providing either a cemented-in metallic threaded pinhole or an insulator assembly which may be assembled with the thimble for attachment to a separate tip pin. The new insulator is available for voltages up to 69 kv. Ohio Brass Co., Mansfield, Ohio.

●

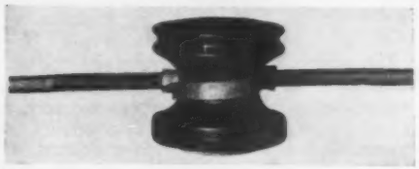
Mercury Arc Rectifier

A new low-capacity, low-voltage, factory-assembled, grid-controlled mercury are rectifier set is available in ratings of 150 kw. at 250 volts and 300 kw. at 550 volts, direct current. The set has a rectifier tank, all auxiliaries and control panel assembled and wired on a common frame and occupies a floor space only 3½ x 6 ft. Simplicity in installation and operation, high conversion efficiency and minimum superintendence make the rectifier well adapted for unattended substations. Allis-Chalmers Manufacturing Co., Milwaukee, Wis.



Tie Wire Eliminator

A new device, patented under the name of Tyclyps, saves more than half the time of attaching wires to insulator spools of the bracket suspension. The Tyclyps consists of a metal strip provided with two hooks slipped over opposite sides of the secondary conductor after it has been put around the insulator spool. The hooks are then rolled tightly around the conductor by a lineman with his pliers. Tyclyps are available in two sizes to fit Nos. 6, 4 and 2 weatherproof hard drawn copper conductors and Nos. 4 to 1/0 ACSR aluminum conductors. W. N. Matthews Corp., St. Louis, Mo.



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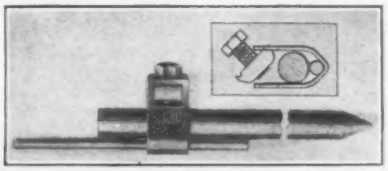
Disconnecting Switch

A disconnecting switch having a new mechanism for developing high contact pressures is now available in ratings from 400 to 1,200 amperes and 7.5 to 69 kv. The switch blade, actuated by a yoke and link motion on a rotating insulator, is of tubular copper with silver-plated contact blocks. Inside the blade, at the location of the contact points, there is a ball and wedge action which forces the blade contacts against the outer fixed contacts at high pressure. The pressure is applied and released by a rod and cam action initiated by movement of the main operating mechanism. Pacific Electric Mfg. Corp., San Francisco, Calif.

●

Grounding Connector

A new low-cost ground connector for use in joining a ground lead to a conductor has been added to the Burndy line of electrical fittings. Known as the Groundem type GH, the design of the connector permits it to be slipped over the top of the rod as a one-piece assembly or, in the event that the rod or pipe has been splayed from driving, the connector may be disassembled and slipped around the conductors. It is made of non-corrosive copper alloys and can be installed with an ordinary wrench. It is available in three sizes, each of which will take a range of ground rod and wire diameters. Burndy Engineering Co., Inc., 305 East 45th St., New York, N. Y.



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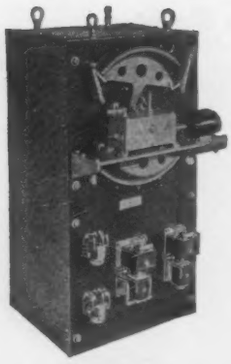
Rock Expanding Anchor

A new anchor for use in rock terrain has been developed by the A. B. Chance Co. It is installed by drilling a hole into the rock and dropping the anchor therein. By turning the rod until the anchor meshes itself firmly into the rock the construction is such that twisting action allows the smooth side to slip up the side of the hole and force the threaded side of the anchor to mesh into the rock. The use of concrete or lead is unnecessary. The anchor is of cast malleable iron and the galvanized steel rod has a drop forged tripleye which gives plenty of room for the twisting bar and permits the use of one to three guy strands. A. B. Chance Co., Centralia, Mo.



Rheostatic Voltage Regulator

Designed especially for synchronous machines where high speed voltage recovery, accurate voltage control and reliability are essential, a new line of rocking contact voltage regulators is available. The two main parts of the regulating equipment consist of a voltage control element and the rocking contact motor operated rheostat with high speed contactors and relays. At normal voltage, the entire regulating equipment is at a standstill, assuring minimum wear and maintenance. Allis-Chalmers Manufacturing Co., Milwaukee, Wis.

●

Phase Rotation Indicator

An improved phase rotation indicator, designed to cover an increased range of voltage and provide a check to show that all three of the polyphase lines are energized is now on the market. The indicator utilizes two glow lamps and a capacitor connected in Y. The neutral of the Y shifts toward one channel for a given phase rotation, the voltages across the lamp becoming considerably unbalanced with the result that one lamp glows while the other remains dark. The new indicator is adaptable directly to 115, 230 or 460-volt circuits either 25 or 50 cycles. General Electric Co., Schenectady, N. Y.

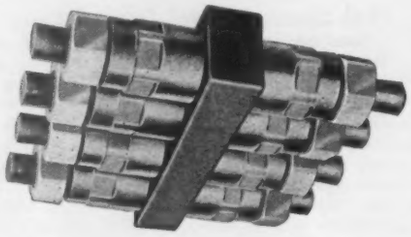
●

Installing Tool for Service Cable

A new tool simplifies the installation of service cable developed for use with the Reliable Electric Co. concentric cable clamps. The device holds the cable on the wedge of the clamp while the lineman pulls up slack and gives final sag to the cable span. The shell of the clamp is then slipped on and tightened, the tool removed and the cable cut without waste. Reliable Electric Co., Chicago, Ill.

Cable Connector

A simple and effective device for interconnecting single conductor secondary insulated cables in manholes and vaults eliminating the use of tape and solder is placed in the market under the trade name of Multitap. The copper bus is covered with molded oil and moisture resistant rubber compound and the connectors and cable ends covered with a molded bakelite insulator sealed at the end by means of a bushing compressed on the cable with a gland nut. Cable heads are interchangeable and made for all conductor sizes up to 500,000 circ. mil. A wrench is the only tool required for installation. G & W Electric Specialty Co., 7780 Dante Ave., Chicago, Ill.



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Strateline Clamp

To provide a suitable straightline clamp for station dead-ending or line use the Ohio Brass Co. announces a clamp known as Strateline. The new clamp is light in weight and develops slip strengths of 50 per cent of the ultimate strength of hard-drawn copper conductors. By its use, it is claimed that the

wire or clamp will not twist which increases clearances. Made from malleable iron, hot-dip galvanized, the clamping surfaces are well rounded and free from sharp point surfaces which might induce flashover or radio interference. The Strateline clamp is available in sizes for cable diameters of 0.28 to 0.43 in., 0.42 to 0.55 in. and 0.54 to 0.68 in. Ohio Brass Co., Mansfield, Ohio.

●

Thimbleye Screw Anchor

Designed for installation without a wrench, a new screw anchor has a large tripleye rod which permits the use of a bar for screwing the anchor into the ground and admits one, two or three strands for guying. The hub of the anchor is small to give maximum area in semi-disturbed earth and the thin malleable blade is correctly pitched for easy installation without danger of the anchor backing up after installation. A flange on the cutting edge reduces friction during the installation. The rod is fastened securely to the anchor, making it practically a one-piece unit. The anchor can be screwed out in case it is desired to retrieve the anchor or move its position. A. B. Chance Co., Centralia, Mo.

Lightweight Portable Instruments

A complete new line of pocket-size voltmeters, ammeters and milliammeters designated as Type AS-5 incorporate an element with a higher torque and improved characteristics and have an accuracy of 1 per cent of full scale range. Features of the new instruments are a Permaloy moving vane, knife-edge pointer and mirror scale for accurate reading. On double- and triple-scale instruments a convenient switch makes it possible to change ratings without removing or rewiring terminal connections. Case is of Textolite. General Electric Co., Schenectady, N. Y.

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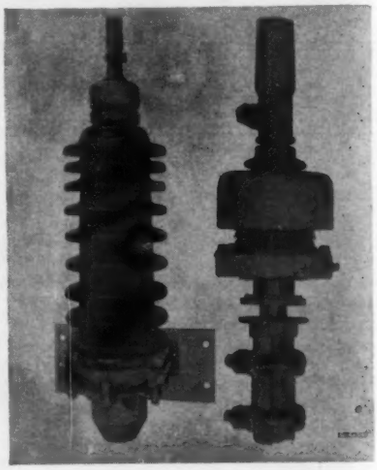


Expansion Joint Cable Terminator

A new single-conductor cable terminator for use on oil pressure cable is equipped at the lower end with a standard wiping sleeve and at the top with an expansion type stud. The expansion member is an oil tight bronze bellows securely gasketed to external parts. It permits free expansion and contraction of the cable under all weather and load conditions. A gas relief plug also is provided. Terminators can be furnished complete with internal barriers and stress cones to suit any type of cable are available at ratings of 46 kv., 750 amp. Delta-Star Electric Co., Chicago, Ill.

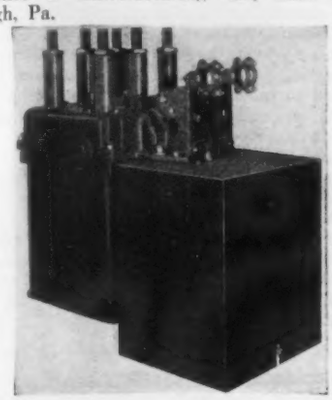
●

Electric-Steam Generators

A line of electrically heated steam generators ranging in size from 2 to 24 kw. and producing steam at pressures between 1- and 300-lb. gage. The units are completely self-contained with automatic pressure control and are built in accordance with ASME boiler codes. Other automatic devices are optional. Units are compact in size and suitable for dairies, laboratories, tailor shops and for providing standby peak service in larger plants. Commonwealth Electric and Manufacturing Co., Boston, Mass.

Indoor Oil Circuit Breaker

A new line of solenoid operated oil circuit breakers rated at 25,000 kva. for service up to 600 amp., 7,500 volts and 800 amp., 2,500 volts are announced by the Westinghouse Electric & Manufacturing Co. A feature of the design is the installation of operating levers inside the breaker chamber removing them entirely from the vicinity of live contact terminals. De-ion interrupters are installed on each pole producing arcing times of ½ to 1½ cycles maximum at 60 cycles. Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pa.



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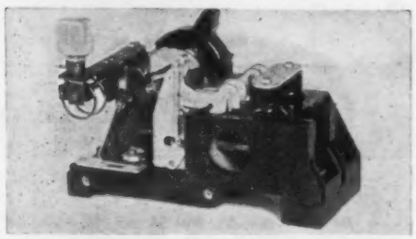
Transformer Circuit Breaker

A double pole overload circuit breaker for mounting inside the case of distribution transformers is announced by the G. E. Co. These breakers are connected with low voltage leads and have an overload characteristic which



makes it possible to obtain the maximum output from the transformer. Tripping is performed by the bending of a bi-metallic thermal strip, the heating of which depends upon the current and oil temperature. General Electric Co., Schenectady, N. Y.

●

Cable End Seal

Known as the Type "FT" a new design of cable end seals is announced by the G. & W. Electric Specialty Co. It consists of a copper terminal lug (solder or solderless style) with a gasketed flange, a bakelite insulator, and a sealing bushing and a brass packing nut. The device is intended for use on paper insulated lead covered cables up to 500,000 cir. mil. 600-volt cables. Its use prevents leakage of impregnanting oil from the end of the cable. G. & W. Electric Specialty Co., 7780 Dante Ave., Chicago, Ill.

Potential Indicator

A transmission line potential device of new design has been placed on the market under the name of "Hipot" indicator. It consists of a coupler unit which forms the center plate of a condenser the two outside plates of which are the high tension conductor and the ground. The indicator does not depend upon connection to the insulator string or bushing but derives its energy from the electrostatic field surrounding the high potential conductor. The charge accumulated on the coupler plate is conducted through a coupling transformer to an indicating instrument of the D'Arsonval rectifier type. The minute currents available can be amplified for the operation of indicating instruments, sensitive relays or for synchroscope operation. Roller-Smith Co., New York, N. Y.

●

Straightline Splice

A non-ferrous splice of new design lowers the cost of line construction and provides a positive joint of high strength. A feature of its construction is a slotted washer which holds the jaws in alignment and does not permit a strand of wire to crowd between them. Ends of the splice fit the wire closely and prevents insertion of burred or crushed wire ends and also act to dampen vibration. The construction also permits easy removal and salvage. Reliable Electric Co., Chicago, Ill.

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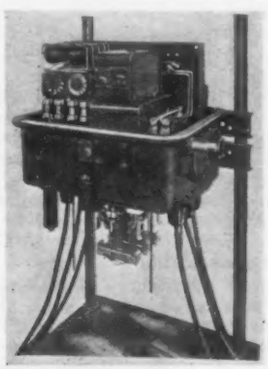


Capacitor Step Voltage Regulator

Known as Type REC, a capacitor step voltage regulator controller, introduces capacity on a line when the line voltage decreases to some predetermined value. The unit consists of a sensitive relay which closes a solenoid operated oil switch connecting capacitors across the line and increasing its power factor and voltage. This method of voltage control improves both the power factor of the line and produces a voltage boost both before and after the point of intion of the regulator. Roller-Smith Co., New York City, N. Y.

●

Portable Test Meter

A new portable test meter, having high accuracy under all normal variations in temperature, voltage and power factor is available to two types: J-5, with five current ranges up to 50-amp.; J-3 with three ranges of 1, 5, and 25 amp. Features of both meters include light weight, accessibility and rugged construction. Sangamo Electric Co., Springfield, Ill.

●

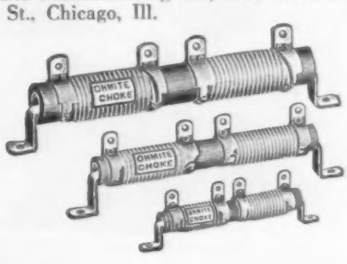
Neutral Wire Clamp

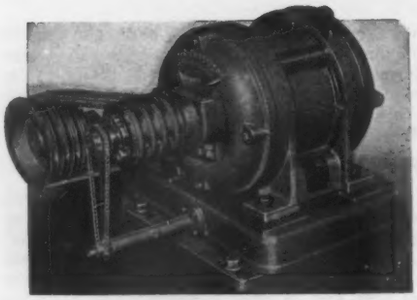
A new neutral clamp that remains tight regardless of pole shrinking has been placed on the market by the Ohio Brass Co. To make the neutral wire permanently tight, the main casting of the clamp, through which the bolt passes, is threaded. This casting cannot back away from the clamping pressure of the end nut. Pressure once applied between these two pieces remains regardless of the shrinkage of the pole. The upper edge of the keeper piece is grooved to take a ground connection which also serves as a takeoff for the neutral secondary service wire. The use of this type of clamp eliminates the necessity for auxiliary clamps to make connections of services or ground wire to the neutral conductor. Ohio Brass Co., Mansfield, Ohio.

●

Power Line Choke

A new series of power line choke coils of unusual effectiveness has been placed on the market by the Ohmite Manufacturing Co. The choke coils are used to suppress the radio frequency component of many miscellaneous sources of noise coming into a radio receiver over the power line and prevent interference coming in over lines from recognized sources of high frequency circuits such as therapeutic machines, welding machines and similar apparatus. They are available in three sizes of 5, 10 and 20 amp., respectively. Ohmite Manufacturing Co., 4835 West Flournoy St., Chicago, Ill.





Adjustable Speed Device

A new design of mounting for Vari-pitch sheaves facilitates speed adjustment of a machine without stopping the unit. The Vari-pitch sheave, which can be increased in diameter by a convenient handwheel on the base of the motor, is used in conjunction with a straight-line, automatic, ball-bearing base. The upper half of the base and the motor itself thus moves with minimum friction, is securely anchored to the foundation and is kept in perfect alignment. The base and handwheel control are coordinated so that the motor base is moved to compensate for various belt positions thus assuring correct belt tension, maximum efficiency and belt life. Allis-Chalmers Manufacturing Corp, Milwaukee, Wis.

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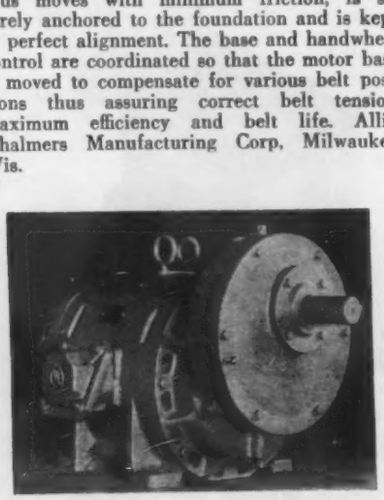


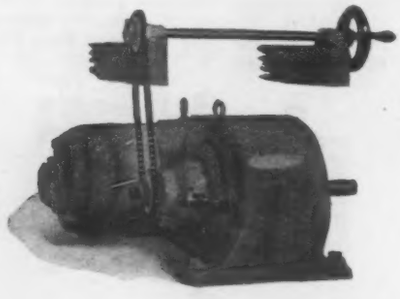
Explosion-Proof Gearmotors

For hazardous locations where speed reduction is required, Westinghouse announces a new line of explosion-proof gearmotors of compact design. Gears are of the single-helical type, especially hardened to provide maximum resistance to wear and shock. Approved by the National Board of Fire Underwriters, they can be used in atmospheres containing explosive vapors. Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

●

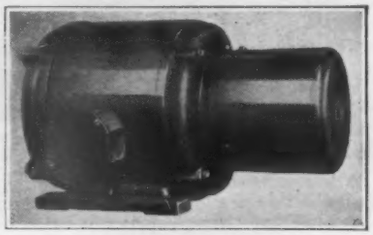
Remote Speed Control

A new line of standardized parts for obtaining remote control for its Varidrive motors is announced by U. S. Electrical Motors, Inc. Bearing supports, sprockets, shafting and chains can be arranged to give speed control from any location and without slippage. An application of the new parts is illustrated. U. S. Electrical Motors, Inc., Los Angeles, Calif.



Motor Mounted Brake

A totally-enclosed, automatic solenoid brake which can be installed integrally with the motor frame in sizes from fractional horsepower to 10 hp. (at 3,600 r.p.m.) is announced by Cutler-Hammer. This brake can be supplied already mounted on any motor by so specifying to the manufacturer. The rotating member, consisting of a single, heavy, moulded disk showed little wear after exhaustive life tests even for maximum horsepower. The brake is completely enclosed protecting it from dirt and mechanical injury. It is also available with dust-tight, weather-proof and water-tight enclosures for both a. c. and d. c. installations. Cutler-Hammer, Inc., Milwaukee, Wis.



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Sound-proof Motor Bases

To eliminate vibration and transmitted noise, a new motor base has been designed by suspending the upper half of the base on resilient balls made of the highest grade rubber set in recesses in parallel flanges. The number of balls can be adjusted to suit the weight and conditions under which the motor operates. The base will maintain alignment for any reasonable belt tension. W. D. Fabling Co., 2043 Sacramento St., Los Angeles, Calif.

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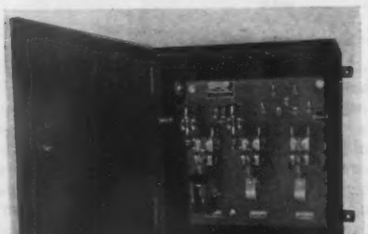


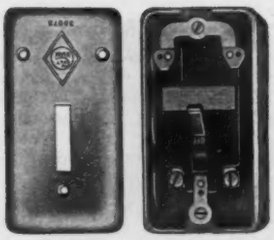
D. C. Motor Starter

A universal, standardized starter for direct current motors can be used for sizes from 5 to 25 h. p. by reconnecting a self-contained resistor. Mercury acceleration relays permit adjustment of the time range from 0.5 to 2 seconds per step. The starter panel swings forward from the cabinet making wiring accessible. The Electric Controller & Mfg. Co., Cleveland, Ohio.

●

Powerduct Cable

Extreme flexibility and durability are characteristics of a new cable development marketed under the name of "Powerduct." Designed particularly for industrial use it consists of three 600-volt rubber-insulated color-coded conductors and one bare neutral conductor cabled with saturated jute fillers bound together with presaturated tape. Over this assembly is a heavy cotton woven fabric and an outer covering of moisture-resisting and flame-retarding compounds which resist deterioration and mechanical abuse. Anaconda Wire and Cable Co., 25 Broadway, New York, N. Y.



Compact Circuit Breaker

A simple, compact auxiliary circuit breaker for standard mounting, recently was announced under the name of "Yoke Mounted" Protectit. This compact control device is designed to be mounted in standard metal wall boxes as well as in special metal cabinets for surface mounting. Two types are available, a fixed capacity device, made in ten differently rated sizes and the interchangeable heater element type for which there are twenty heater elements all with different ratings. Both Protectits have a maximum voltage rating of 250 volts a.c. or d.c. and a maximum horsepower rating of 1 H. P. Colt-Noark Division, Colt's Patent Fire Arms Mfg. Co., Hartford, Conn.

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Combination Linestarters

Compact and easily installed, a new motor control unit combines the disconnecting switch and magnetic starting panel in one enclosing case. The starter is of the de-ion type which gives full protection to the motor without the use of fuses or separate heating elements. Units are available in a number of styles and in sizes from 1 to 50 hp. Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

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Motors &

Compact Capacitor Unit

A new design of power factor correction capacitors permits easy installation through the use of mountings which permit installation on ceiling, floor or wall in single units or compact groups up to 100 kva. Cornell-Dubilier Corp., New York City, N. Y.

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Solenoid Motor Starter

A small compact motor starter has been designed by using the up-and-down motion of a solenoid and completely enclosed contacts. The principle is said to increase capacity and reduce wear and maintenance. Starters are available without back-of-the-panel wiring for built-in applications or with enclosing cabinets for general use. They are available in sizes from 5 to 50 hp. Allen-Bradley Co., Milwaukee, Wis.

Mercury Toggle Switch

A mercury control switch, consisting of a toggle-operated mercury tube mounted in a small enclosing case, has been especially designed for industrial and illuminating engineers for application in corrosive atmospheres, for heavy duty service or for hazardous locations. In operation the switch is silent and has no exposed arc. List price: $9.00. Hart Mfg. Co., Hartford, Conn.

●

Small Motor Protector

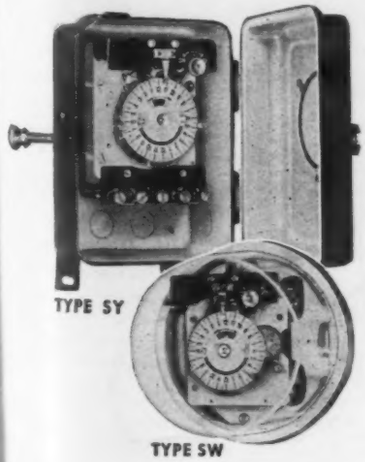
Known as the "Thermo-tector," a new thermal overload switch operates on line current and can be installed on the conduit or terminal box of fractional horsepower motors. It is self-contained and has no links or plugs to be replaced. When overload occurs, the device automatically disconnects the motor from the service and reconnects it when the motor has had time to cool. It is available for motors having a full load rated current from 1.3 to 10.4 amperes. General Electric Co., Schenectady, N. Y.

●

Control

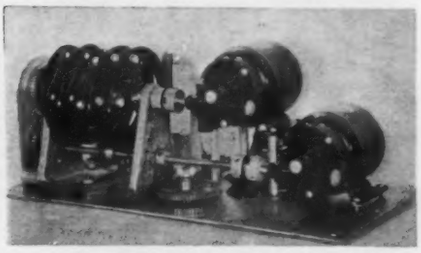
Time Switches

Two new time switches, designed by Sauter, have been placed on the market. Embodying the basic reliable and simple design of former models, the new units are available in two types, SY and SW. The former is a cabinet mounted time-switch and the latter suitable for mounting in a standard meter socket. Both switches are offered at 4 and 30 ampere capacities and can be supplied with plain or astronomic dials. R. W. Cramer Co., 67 Irving Place, New York City, N. Y.



Speed Regulating Press Control

A new application of control principles was utilized in the construction of a speed regulating relay for maintaining a preset slow down speed on a printing press. The relay controls a contactor which cuts resistance in and out of the wound rotor driving motor secondary. The relay is driven by two small motors, one energized at line frequency and the other from the slip frequency of the press motor. The small motors are mechanically coupled through gears and a differential, the frame of which carries floating contacts which move to correct speed variations as they occur. General Electric Co., Schenectady, N. Y.



Industrial Photo-Cell Control

Doubled speed and sensitivity are claimed for this photo-electric control. A light intensity of 100 foot-candles provides adequate energy for positive operation. The relay has an output capacity of 500 watts. The relay is arranged for single-pole, double-throw operation, with an over-all speed of response of 0.15 sec. Weston Electrical Instrument Corp., Newark, N. J.

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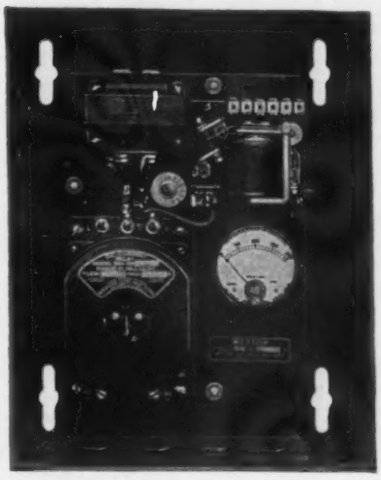

Temperature Control Switch

Especially suitable for close control of temperature differential requirements, a new air-type temperature control switch has been designed for remote control of heating plant applications. Range of adjustment is from 25 to 85 deg. F. Price: $9.00. Jefferson Electric Co., Bellwood, Ill.

Indicating Pressure Switch

A new pressure switch for the control of small compressors and fluid pumps and incorporating visual indication of operation as well as themal overload protection has been placed on the market. Compact, and neat appearing, the switch is designed with a split-type enclosing case which makes installation easy. Cutler-Hammer, Inc., Milwaukee, Wis.

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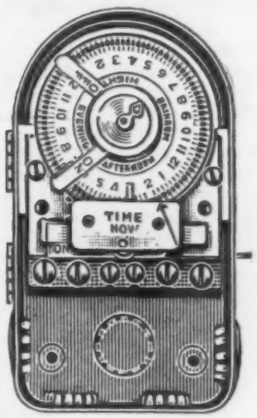


New Tork Clock

Small and compact, a newly designed electric time switch may be set on variable schedules without the use of tools. Constructed of non-corrosive materials, features of the design are a non-magnetic case, oil-sealed gears and a wireway with five knockouts to facilitate installation. Tork Clock Co., Mt. Vernon, N. Y.

●

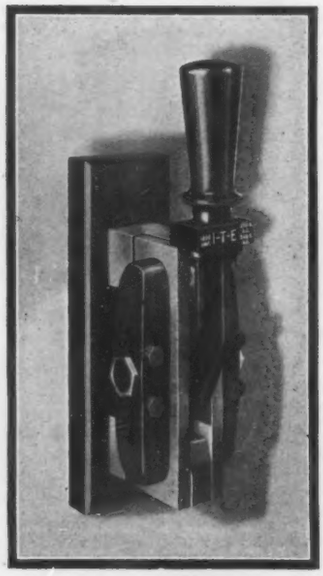
Resilient-Mounted Motor

A new addition to the Wagner Electric Corp.'s line of motors is the annular resilient mounting available on the repulsion start-induction, split-phase, capacitor-start, capacitor, and polyphase types of motors. The motor base is shaped in the form of a cradle for supporting the motor. Large rings of rubber which support the shaft, are vulcanized to inner and outer steel rings, thus minimizing vibration and noise. This type of mounting is also available with belt-tightener bases so designed that the belt tension varies directly with the load. Wagner Electric Corp., St. Louis, Mo.

●

Tungar Arc Welder

A new Tungar direct-current, arc welder utilizing a simplified 9-point arc selector is now available for both light and heavy welding and fabricating. The internal construction embodies no moving parts and performance characteristics are excellent. Light in weight, portable and reliable, the unit is designed for machine and fabricating shops and will weld heavy members or light sheets. General Electric Appliance and Merchandise Dept., Bridgeport, Conn.



Improved Knife Switch

A new design of knife switch applies high pressure to both upper and lower contact points by utilizing the last portion of the handle travel to exert clamping action on insulated sidebars on the switch blades. In closing or opening, the handle gives a quarter-turn to a threaded bolt joining the sidebars which movement is sufficient to apply or remove high pressure between the blades and copper block contacts, depending upon the direction of travel. Simple in design and operation, the mechanism assures high conductivity and ease of operation. I-T-E Circuit Breaker Co., Philadelphia, Pa.

●

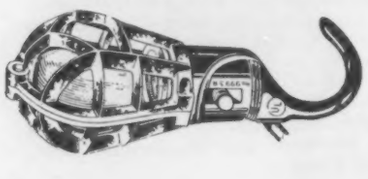
Fuse Clip Clamp

Cutting down the resistance between the clips and fuse or switch blade a new device consists of a clamping ring which slips over the outside of the jaws and compresses them by means of a knob tightener. It is particularly valuable for heavily loaded circuits as its use prevents burning and pitting and electrical loss. Ideal Commutator Dresser Co., Sycamore, Ill.

●

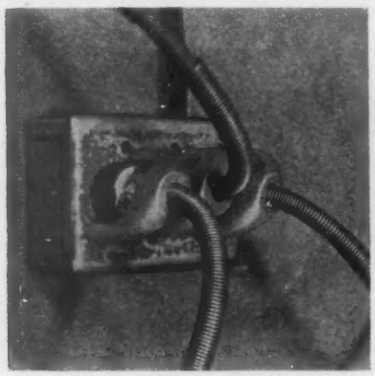
Insulating Lamp Guard

Designed for use where complete protection from shorts and shock is vital in a portable lamp, a new lamp guard consists of a pliable, moulded rubber socket with a steel-reinforced, rubber-insulated hook handle and a moulded plastic lamp guard. The unit is shatter-proof, corrosion-resistant and safe. McGill Manufacturing Co., Valparaiso, Ind.



Twist Yoke Extension Cord

Designed to remove strain from contacts and assure permanent connection for extension cord caps, especially in use with hand tools and portable equipment, is the cord offered by The Logan Sales Co., 5225 Wilshire Boulevard, Los Angeles. Patents are pending. A slight turn places locking pins in counter sunk holes, while a rubber gasket under the outlet cover guards against dirt. Adaptable to any standard outlet box, covers are furnished already punched. Old covers may be punched to order.



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All-Porcelain Outlet Boxes

A new line of all-porcelain outlet boxes and covers for use with standard systems of wiring is now available. Made of well-vitrified porcelain, the units are strong, safe and will not corrode. Their use eliminates the expense of grounding. Porcelain Products, Inc., Findlay, Ohio.

Wiring & Supplies

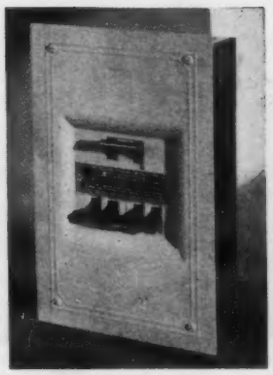
Brazing Alloy

A new alloy which facilitates brazing of copper and copper alloy joints such as are common in refrigerator manufacture has been placed on the market under the name Phos-Copper. It has a low melting point, (707 deg. C.), high tensile strength and excellent penetration as well as a high electrical conductivity and resistance to corrosion. The new allow can be obtained in rods, strip, ribbon and other shapes. Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

●

Unbreakable Rubber Plug

A new soft rubber plug of modern design lends itself to "banking" of plug-in appliances in a group of outlets because of its narrow width. Made of high-grade soft rubber, the plug is unbreakable and provides a reliable, safe and convenient method of connection. Belden Manufacturing Co., 4689 Van Buren St., Chicago, Ill.



Multi-break Load

As a substitute for conventional a. c. entrance and branch circuit protective equipment, a small, compact "package" load center has been placed on the market by two manufacturers. It consists of one or more small circuit breakers grouped in a sealed moulded housing which is hinge-mounted in a cabinet. Practically any combination of main and branch circuit arrangement is available and the use of the automatic circuit breakers eliminates the necessity of fuse replacement. Square D. Co., Detroit, Mich., and Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

●

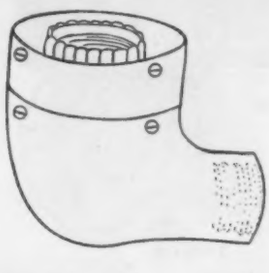
Combination Entrance Switch

A combination main and range switch with four branch circuits simplifies wiring installation by a new design which permits tilting or removal of the switch assembly by loosening one screw. Holes in the carrier block permit fuse testing without removal. Dead-front construction and porcelain barriers enhance the safety features of the switch. Cutler-Hammer, Inc., Milwaukee, Wis.

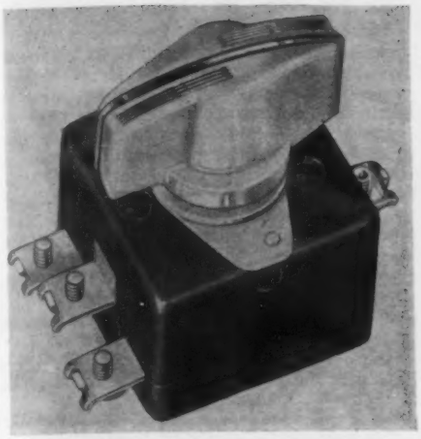
●

Weatherproof Sockets

Weatherproof and built of polished aluminum, a new line of sockets can be used with or without reflectors. Neat appearing and easy to install, the new line is manufactured by B. Hartman, 168 Sunset St., Long Beach, Calif.



Weathermakers



Range Switch

A new heavy-duty silver-break heater switch is available for all range or heater requirements being obtainable in 4 and 8 positions, 2 and 3 wire balanced load, double-pole or single-pole series parallel and other connections. Handles are available in numerous colors to match finish of ranges, water heaters or other appliances. Arrow-Hart & Hegeman, Hartford, Conn.

●

Duplex Receptacle

An improved receptacle of the duplex type incorporates the features of double side spring contacts, wiring accessibility and bakelite barriers. Contributing to trouble-free performance are the securely attached yoke and heavy construction used. Bryant Electric Co., Bridgeport, Conn.

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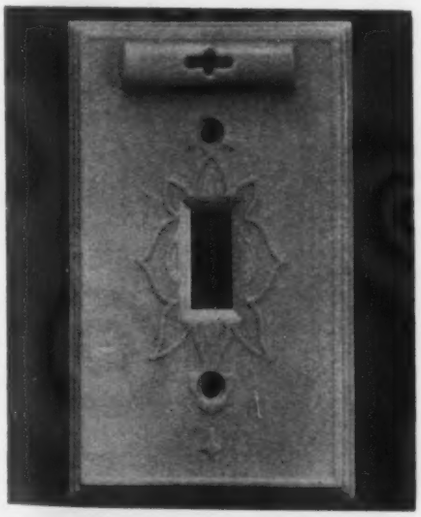


Illuminated Switch Plate

An improved switchplate incorporating a small gaseous light simplifies location of lighting switches in dark rooms. Built as a unit, the new switchplate can be substituted for existing switchplates and is easily installed. Marketed under the name of Tecklite by the Tecklite Mfg. Co., 152 N. La Brea, Los Angeles, Calif.

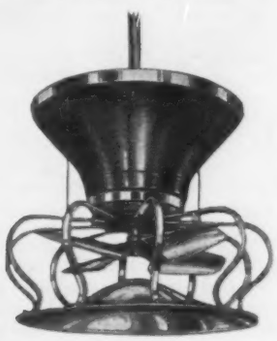
Plug-in Conditioner

An air-conditioner which can be installed in 25 min., and which plugs in like an ordinary appliance has been introduced for room cooling. The unit is hermetically sealed, cushioned in a cabinet of walnut finish. A 12-in. blower fan speeds condensing action, and a portion of room air is exhausted outside to maintain fresh supply. Westinghouse Electric & Mfg. Co.

●

Fans

Kisco Deflector, intended especially as an auxiliary to air cooling, is a recent innovation in fan design. For ceiling suspension, it carries a hood below the fan, which deflects the air current outward. It is designed to produce maximum recirculation of air in the lower part of the room without disturbing warm air accumulating near the ceiling. Other Kisco models feature abundant power. Smallcomb Electric Co., Los Angeles.



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Wagner fans for 1937 emphasize attractiveness, shaded-pole induction motors which will not cause radio interference. Wagner Electric Corp., St. Louis.

●

Westinghouse introduces a new line with over-size, deeper-pitch blades, announced as "ultra quiet." Models are improved for quiet and beauty.

General Electric is giving its new models widespread publicity, has not yet announced specifications.

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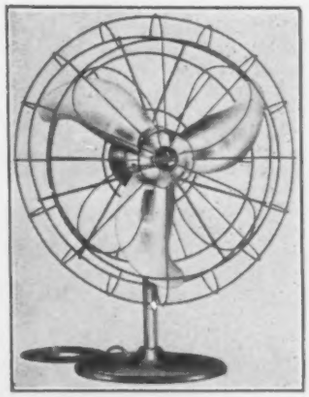

Emerson, introducing a variety of models, emphasizes both three and four-blade types, with highly polished formed aluminum blades. They are designed for greater breeze penetration and quieter operation without current increase. Emerson Electric Mfg. Co., St. Louis.

●

Cool Spot line features a 16-in., quiet-type blade, oscillating model. Signal Electric Mfg. Co., Menominee, Mich.

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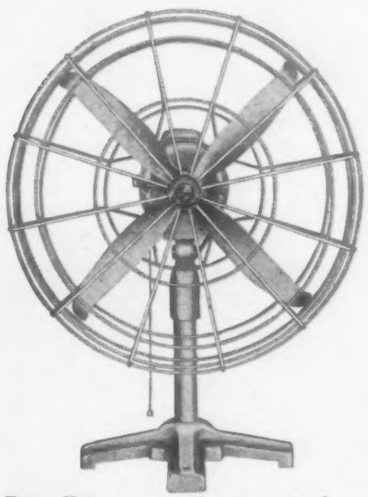


Propellair, a propeller-type circulator, is introduced this year with a 22-in. size for home ventilation, augmenting the 28-in. model Green morocco finish, chromium trim improve appearance. Propellair-Inc., Springfield, Ohio.

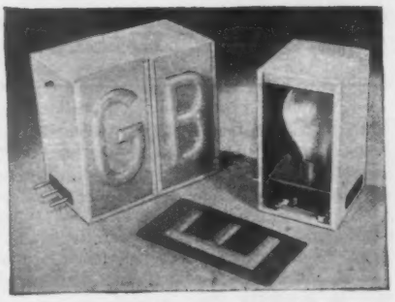
Two Lamp Developments

Principal development in lamp manufacture last year was the introduction of the bi-post base, 1,000-watt general service lamp, supplementing mogul-base lamps of the same wattage with substantial reduction in size. The use of heat-resistant glass increases its ruggedness and eliminates the necessity of waterproof fixtures. Being built-up from the base, in contrast to the manufacture of the mogul-base type, the new bulb has a much more accurately positioned filament. It is designed for base-up burning. General Electric Co. and Westinghouse Electric & Mfg. Co.

To simplify the modernizing of commercial and industrial lighting installations, a 300-watt lamp with a medium screw base was introduced last month. Previously, the shift from 200- to 300-watt lamps required installation of new equipment to accommodate mogul bases. The new lamp will fit most 200-watt fixtures, and has the same light center length.

Plastic Bowls

Plastics continue to find application in the electrical industry. One type, Plaskon, is used in this reflector bowl. It bears I.E.S. approval as conforming to standards of diffusion. Waterbury Button Co.

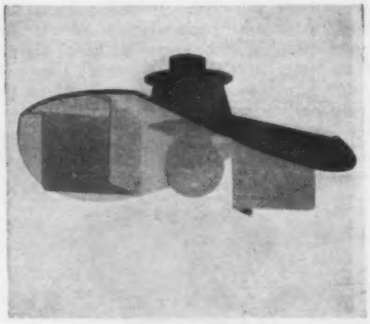


Spell-O-Light

Basis for the animation of this unit is a patented contact. These allow a group of the units to spell out a message by letters. Each unit box can be separately adjusted. Each letter can flash on individually or in unison. A one-letter metal box is complete in itself and two or more are electrically and mechanically coupled merely by pushing them together. No wiring is required other than plugging in a cord. Removable translucent letters, obtainable in several colors, slide into the frames of the boxes. Besbee Products Corp., subsidiary of Heinemann Electric Co., Trenton, N. J.

Stock-Bin Lights

Reflectors designed especially for the illumination of bins, shelves and stocks located in aisles, have been publicized by at least two manufacturers.



Westinghouse Electric & Manufacturing Co. has dipped down the sides of a reflector to redirect light into bins and cut off stray. Two triangular vanes cut off light along aisles and direct it toward the working plane.

Benjamin Electric Manufacturing Co.'s model employs a trough-shaped reflector beneath which is a V-shaped deflector bar. The first directs maximum light downward, while the second directs light upward. Apertures in the ends of the reflector allow illumination at points between units. Four types of hoods are available—pendent, angle, feed-through and outlet box.

Skylight Reflector

Among new designs for special lighting application is the "Skylight" reflector, designed to minimize the intensity of specular reflections from shiny surfaces by providing artificial luminous ceiling. A surface of unusually low and uniform brightness is used to eliminate harsh shadows. It consists of a 28 x 36 inch, trough-shape porcelain enamel steel reflector fitted with two medium-base sockets for lamps from 15 to 200 watts. The reflector opening is covered by two sections of flat diffusing glass joined and removable at the middle. Units may be ganged together. They are especially useful in lighting highly polished, plated, or glossy surfaces and in printing rooms where shiny reflections from freshly cast type may cause error. Benjamin Electric Manufacturing Co., Des Plaines, Ill.

Light Hood

The Light Hood is designed to produce glareless, high intensity lighting for industrial applications such as mass production assembly lines, inspection and sorting tables, engraving benches, etc. An aluminum trough contains the light sources and a steel diffusing hood redirects light to the working level. Standard sections are 10 ft. long, but other lengths are available. Over all width is 30 in. and height 17 in. Two ¾ in. steel rods fitted with hooks are furnished for the section. Curtis Lighting.

Lighting

Office Lamp

An important development in the design of lamp bases is the adaptation of improved reflectors and diffusers for a variety of office applications. The White Knight is among these. It may be clamped to the edge of a desk and the swinging arm used to adjust the light source. It is useful on small or crowded desks. Greist Manufacturing Co.

Beam-Director Attachment

Conversion of installed reflectors into supplementary lighting units is the purpose of the Beam-Director. It consists of simple, auxiliary projectors of aluminum which are attachable within the skirt of dome reflectors. The unit will build up illumination over areas 30 to 36 inches in diameter located within 10 or 12 feet of the reflector. It is capable of intensifying the illumination produced by a general overhead system by 10 to 15 foot-candles. It permits a wide range of attachments, is designed for a minimum reduction of light efficiency, is particularly effective in directing additional illumination into shaded surfaces of machines or work benches. Benjamin Electric Manufacturing Co., Des Plaines, Ill.

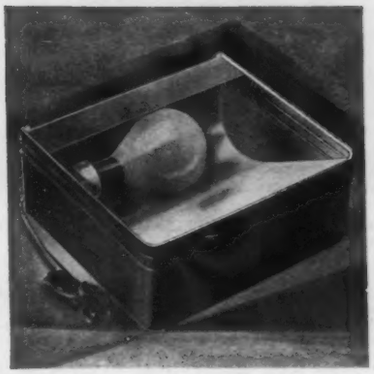
Self-Contained Photo-Relay

Requiring no separate light source is a phototube relay which responds to reflected light from a passing object, illuminated by a light source within the unit itself. Amplifier and sensitive unit are within a single casing, and the device, designed especially as a "package" burglar alarm for home or office, can be installed simply by plugging in. Teletouch Corp., 37 W. 54th St., New York.

Equipment

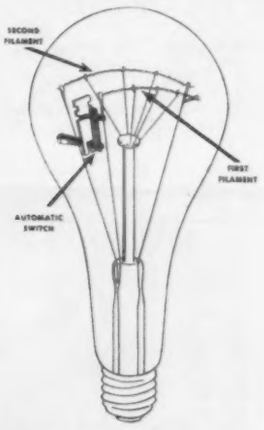
Flush Ceiling Fixtures

"Red Cap" fixtures are designed for flush installation in room ceilings during construction. Three designs are available for low, medium or high ceilings. Units are dust tight, made of No. 16 B. & S. gage aluminum with porcelain sockets and ½-in. conduit fittings. Ceiling rings are of cast iron and support the reflectors. Sheet iron doors are hinged to the ceiling rings. S & M Lamp Co., Los Angeles, Calif.



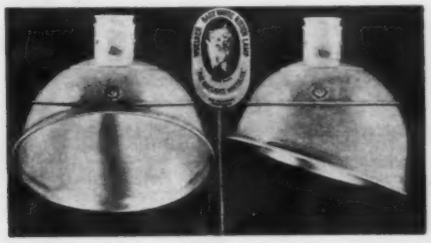
Boxlite

As an added light source where ceiling wiring is inadequate or where portability is desired, the Boxlite has been introduced. It is designed especially for commercial installation and directs light against the ceiling. Dimensions are 14⅜ x 5⅞ x 12¾ in. It is equipped with a mogul socket to accommodate 500 watts. The F. W. Wakefield Brass Co., Vermilion, Ohio.



Double Filament Lamp

New on the market is a lamp which is intended to sell in competition with the present incandescent bulb and which carries an extra filament. When the lamp is first turned on, current flows through the two filaments A and B. Heat from filament A causes a thermostatic strip to eliminate B from the circuit. When the filament A burns out the switch cools and recontacts B. Double-Life Lamp Co., Hoboken, N. J.



Adjust-to-Angle Reflector

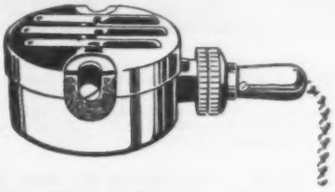
An adjustable reflector readily moved to give any angle of beam up to 45 deg. by a simple lock-screw adjustment is now available for mounting in either a brass or porcelain socket or semi-flush and flush arrangement. Wuelker Lighting Co., 889 Pacific Ave., San Francisco, Calif.

Photo-Cell Filters

To bring the spectral sensitivity of the photo-electric cell into close agreement with that of the human eye is the purpose of the Viscor all-glass filter. It is intended for use with direct reading photometric instruments. It is designed to eliminate the effect of non-visible radiant energy and excess sensitivity in the visible spectrum. Approximate accuracy of correction at normal incidence is said to be plus or minus 5 per cent for commercial monochromatic sources. Total transmission is approximately 37½ per cent. Weston Electrical Instrument Corp., Newark, N. J.

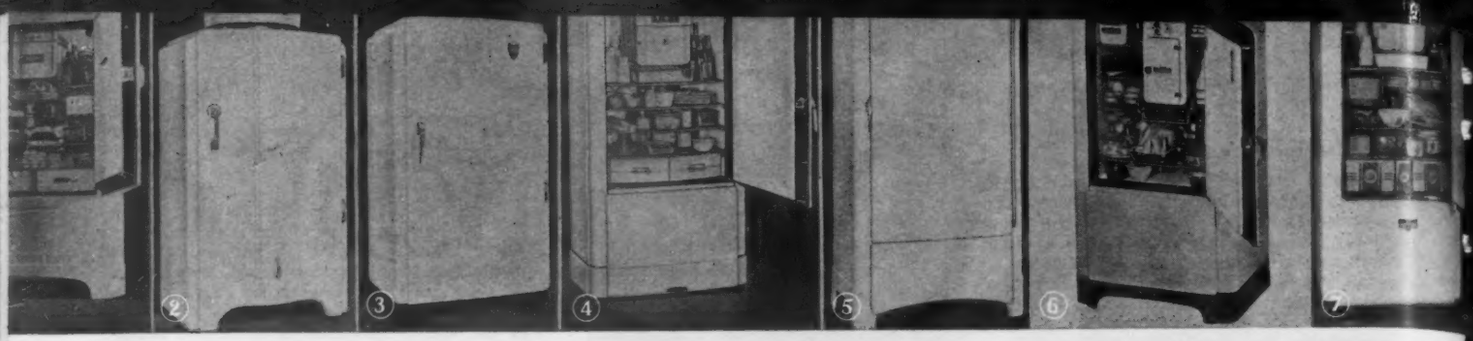
High Capacity Light Switch

Recently placed on the market is a 10 amp. switch designed for the control of the new two-filament, three-light lamps with combined loads as high as 1,000 watts. The switch may be used in canopies, link fixtures, floor and table lamps or in outlet boxes. It is furnished with either pull chain or plain lever control. The catalog number is 1020 for the canopy types and 1029 for the link type. The switch is rated at 10 amp. 125 volts., 5 amp. 250 volts. Size is 1¾-in. diameter by ⅞-in. thick. The McGill Mfg. Co., Valparaiso, Ind.



Mercury-Mazda Units

Now available from all principal manufacturers are combination units, employing both mercury vapor and mazda lamps to give spectral distribution more nearly approximating daylight. This indirect, aluminum luminaire includes transformer auxiliary. Suspension is 3 ft., bowl 17-in. diameter by 5¾ in. The mercury lamp is 250 watts, and two mazdas each 200 watts. Curtis Lighting, 1123 W. Jackson Blvd., Chicago.



Refrigerators

Refinement of details, improvements in efficiency, and greater flexibility of interior shelf arrangement seem to be the really minor changes in practically all lines this year. Gadgets seem to have reached their natural limit. Prices reflect a slight increase. The industry, however, seems determined to place more faith in increased advertising and sales promotion to market its substantially boosted sales quotas. Specific new features are briefed below. (See Manufacturers' Directory for Western representatives. Full details available from them.)

● APEX—Features enlarged freezing chamber, "giant freezer", capable of quick chilling or cold storage of large roast or two chickens. New horizontal styling and other improved details. Apex Rotarex Mfg. Co., Oakland, Calif.

● BRIGGS—Three models designed for chain store competition, direct from manufacturer to dealer. Standard equipment, with de luxe accessory kit sold separately. Johnson Motor Co., Waukeegan, Ill.

● CROSLEY—First radio equipped refrigerator. New hermetically sealed unit providing greater economy. Shelvador again, and other features. Crosley Radio Corp., Cincinnati, Ohio.

● FAIRBANKS-MORSE—"Conservador", or double door, improved. Few other changes announced. Fairbanks-Morse & Co., Indianapolis, Ind.

● FRIGIDAIRE—Featuring larger freezer compartment, two-way frozen storage compartment, two-way cold storage tray, 9-way adjustable shelf arrangement, wider cabinet, sliding and removable shelves, new all metal trays with automatic cube release in all models. Exterior food safety indicator, plus all former features. Frigidaire Corp., Dayton, Ohio. (Picture No. 1 above.)

● GENERAL ELECTRIC—More models, 18 in all, mostly flat top; only two monitor top models, 6 and 8 cu. ft. Lower prices. All shelves slide. Freezing speed accelerated. Variety of interior features. Monitor top models have unrefrigerated storage drawer in base. General Electric Co., Nela Park, Cleveland, Ohio. (Picture No. 2.)

● GIBSON—New cabinet design. Freezer shelf, defrosting into a jar. Controlled air circulation. Swinging shelf. Glass vegetable freshener in deluxe models. Gibson Electric Refrigeration Corp., Greenville, Mich.

● GRUNOW—Simpler styling, more ice capacity, new "Aerator" to keep food odors trapped. Lower prices. General Household Utilities Co., Chicago, Ill.

● HOTPOINT—Three lines, all flat top. Hermetically sealed unit, stainless steel, large freezer. Sliding shelves, other deluxe features and equipment. Edison General Electric Appliance Co., Chicago, Ill. (Picture No. 3.)

● KELVINATOR—Wider, waist high, more power, with rounded front on shelves. Ivory shaded light, plus last year's detail features. Sliding shelf lifts out. Super de luxe models "air conditioned" with separate freezer and food compartments. 16 models, including a new 9 ft. Nash-Kelvinator Corp., Detroit, Mich. (Picture No. 4.)

● LEONARD—Featuring combined lighted dial for temperature control and thermometer. Adjustable partition in vegetable bin at base; rearranging shelf, rounded shelf fronts, and green interior light, etc. Leonard Refrigerator Co., Detroit, Mich. (Picture No. 5.)

● NORGE—Introduces new low temperature, high humidity model; freezer maintained at below 40 deg.; claim food keeps 2 to 5 times as long. Cabinets wider, less deep. Movable insert shelves give 9 shelf arrangements. Colored mother of pearl finishes offered. Also gas-electric refrigerator for sale beyond power lines. Norge Division, Borg-Warner Corp., Detroit, Mich. (Picture No. 6.)

● STEWART-WARNER—"Sav-a-step rack, removable from hinge, or hangs on door. Automatic tray slides from base for rearranging, etc. Airplane lighted dial cold control. Slow cycle compressor, reversible freezer door. Adjustable shelves. 11 models. Stewart-Warner Corp., Chicago, Ill.

●

Universal

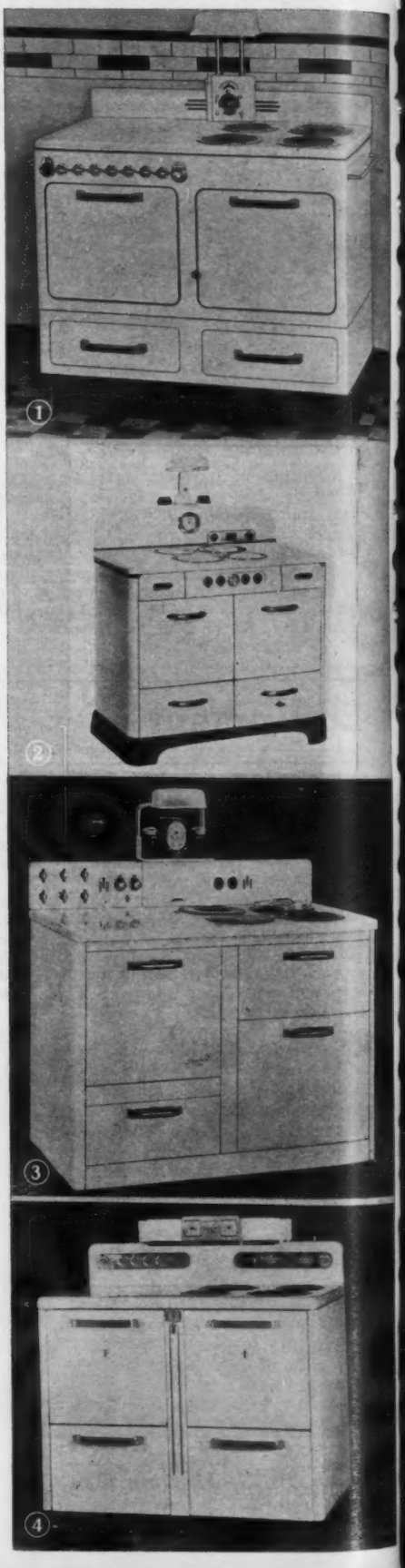
UNIVERSAL—Removable basket hanging to door. Drawer type vegetable container. "Ice-cycle" rolling refrigerating unit. Simplified defrosting. Tray release. Landers, Frary & Clark, New Britain, Conn.

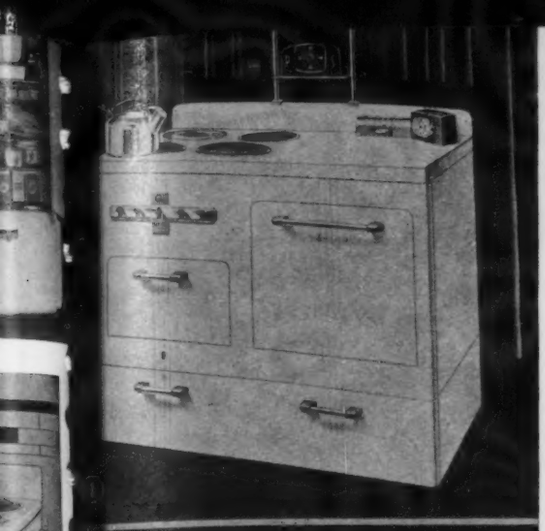
● WESTINGHOUSE—Faster freezing Sanalloy froster, more economy, greater ice capacity unit, mounted in base of all models. Freon refrigerant throughout 19 models. Color changes in interior trim. Detail improvements throughout. Westinghouse Electric & Mfg. Co., Mansfield, Ohio. (Picture No. 7.)

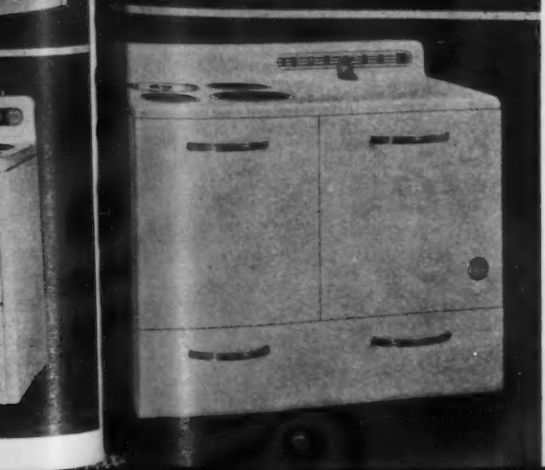
●

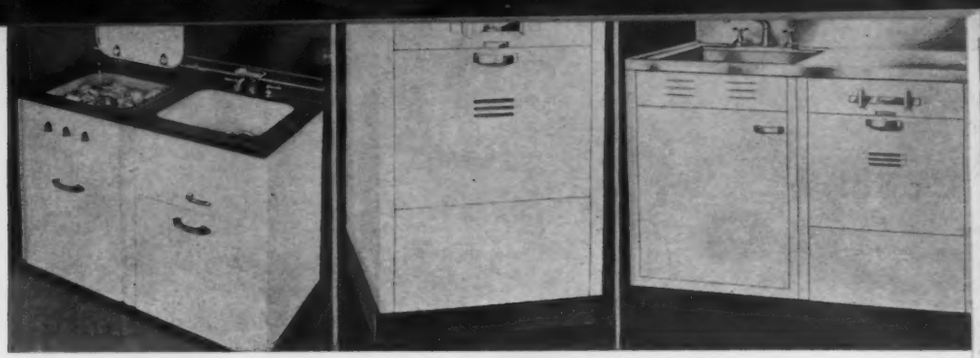
Ranges

Few major changes in range design are made in 1937 models. Cabinet, table-high styles predominate. Details have been refined, convenience improved. Vents are in the front on the splash plate. Every line has a variety of models and wide price range. Some prices reflect slight increases. Brief review of new features follows. See Manufacturers' Directory, in this issue, for western represen-









tatives from whom full information is available.

●

A-B—Information on new models not received. All standard features. A-B Stove Co., Battle Creek, Mich.

●

CRAWFORD—Eight models in line, from deluxe with two ovens and all modern features, to low priced rental models. New 1937 models not yet announced. Walker & Pratt Mfg. Co., Boston, Mass.

●

ELECTROMASTER—"Seventy" range features new thrift cooker, closed units, large "mono-unit" oven, warming compartment drawer, utility drawer, with lamp assembly, timer clock and electric teakettle. 5 other models. Electromaster, Inc., Detroit, Mich. (Picture 1, page 65.)

●

ESTATE—Information on new models not received. All standard features. Estate Stove Co., Hamilton, Ohio.

●

GENERAL ELECTRIC—Wide range of models, beginning with "Comet", low priced model on legs. "Meteor" (illustrated here, picture 2) has cooker, accessories, with back shelf and lamp, condiment jars and timer available. "Speedster" features triple oven—providing small oven in upper section for single shelf cooking jobs. "Chancellor" is super deluxe model. General Electric Co., Nela Park, Cleveland, Ohio.

●

HOTPOINT—Among many new models available in porcelain or monel top with variety of equipment is new "Dorchester" (picture 3) featuring new charcoal type smokeless broiler pan, new type oven lining, improved switchboard assembly. "New Belmont" is new low priced model, with thrift cooker, other features. A "New Vanity" Telechron timer clock is available. Edison General Electric Appliance Co., Inc., Chicago, Ill.

●

KELVINATOR—Seven new models in porcelain, feature new armored surface element. Picture 4 shows model ER-50, with warming compartment, contains racks for utensils, dish covers, etc. Oven is single unit, circulation type. Scotch kettle cooker in all but apartment model. Kelvinator Corp., Detroit, Mich.

●

L & H—New styling features, Calrod units, other improvements. Divided top, center oven, etc. Lindemann & Hoverson Co., Milwaukee, Wis.

●

MARION—"Admiration" model (Fig. 1, p. 64) features both a high and low heat oven, Hart temperature control, special minute minder and clock on either oven, back surface unit or convenience outlet. Other features. "Companion" is new, low priced apartment model, 3 surface unit, full size oven. Rutenber Electric Co., Marion, Ind.

●

MONARCH—A newly styled line for 1937 in porcelain. New illuminated dial oven temperature control. Low priced for volume market is "Modernique". Deluxe "Mode", other models, all with 16 in. ovens, other Monarch features. Malleable Iron Range Co., Beaver Dam, Wis.

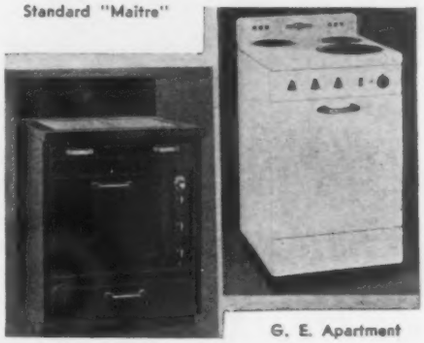
●

NORGE—Matched in color, line, with Norge refrigerator. 6 models from deluxe with central cooking units, to compact 3 unit apartment model. Features oven light, hand knob adjustable broiler, higher power broiler element, Chromalox surface units. (Picture 2, p. 64.) Norge Division, Borg-Warner Corp., Detroit, Mich.

●

OCCIDENTAL—New models for 1937 not yet announced. Steiger & Kerr, San Francisco.

Standard "Maitre"



G. E. Apartment

●

STANDARD—Full line all sizes and styles. New model 1485, for large homes; two ovens, 16 and 18 in., four surface units, warmer, utensil cabinet, light, timer, and cooker (Fig. 3, p. 64). "Maitre", illustrated on this page, for tea rooms, small restaurants, clubs, diet kitchens. Combines at restaurant surfaces or open or closed units or griddle. Oven 18x19 in., 14 in. high. Finish black enamel. Warmer drawer in base. Other features. Standard Electric Stove Co., Toledo, Ohio.

●

UNIVERSAL—Complete line, all standard modern features; new models not yet announced. Landers, Frary & Clark, New Britain, Conn.

●

WESTINGHOUSE—Full line 10 new models. Deluxe models have 2 ovens, individually controlled, separate portable cooker, minute minder, clock, cigaret lighter, two appliance receptacles, one on timer. Economizer unit now with four heats—high, medium, low, simmer. Special baffle in ovens distributes heat. Extra oven capacity. Other features. Smart styling. (Picture 4, p. 64.) Westinghouse Electric & Mfg. Co., Mansfield, Ohio.

●

WOOLWINE—Six models, embodying all modern features. "Beverly Hills" model, illustrated, two ovens, four high speed units, list $189.50. "Malibu" model with four speed units, oven and warming oven, list $89.50. Finish white or ivory. Woolwine Co., Los Angeles.

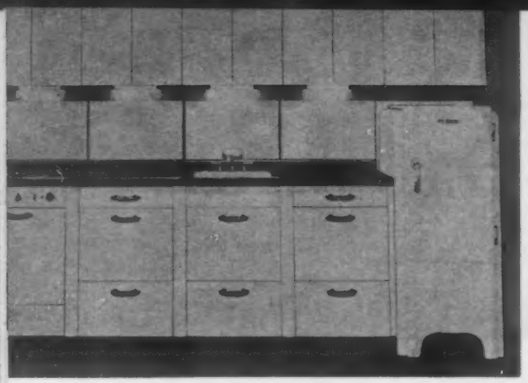
●

Dishwashers

GENERAL ELECTRIC—"Electric Sink", combines electric dishwasher, top opening model, and G. E. Disposall garbage unit, in one package. Obtainable in several models to accommodate all homes. General Electric Co., Nela Park, Cleveland, Ohio. (Picture 1, above.)

●

HOTPOINT—"Waverly" model, for use under drainboards supplied by others. "Arlington", complete unit, including top. Side opening washer. Interlocking control. Removable tray of chromium plated brass. Specifications on application. Edison General Electric Appliance Co., Inc., Chicago, Ill. (Pictures 2 and 3, Waverly model before and after installation.)



Unit Kitchen

●

GENERAL ELECTRIC—Standardized, prefabricated, interchangeable units to fit any kitchen plan. Six basic sections: range, dishwasher, sink, refrigerator, base cabinet and corner section; each section has 4 divisions—top storage cabinet, lighting strip, back splash wall panel and base unit of drawers or appliance. Top opening dishwasher. Sink can be combined with garbage Disposall or storage drawers. Either 3- or 4-unit range, with standard oven available. Extremely adaptable to old or new kitchens. General Electric Co., Nela Park, Cleveland, Ohio.

●

Water Heaters

●

ELECTROMASTER—Five models, 30 to 80 gal., 2 to 5 kw., include table top model. New styling. (Right picture below.) Galvanized copper bearing steel tank, large surface heating inserts, two units, two thermostats, cold water baffle. Electromaster, Inc., Detroit.

●

KELVINATOR—Six models, 30 to 80 gal., including table top (porcelain) model for building into kitchen. All models square, styled, white body, black base. Nash-Kelvinator Corp., Detroit, Mich.

●

WESTINGHOUSE—Five new heaters added to last year's line, include 1 gal., 3 gal. and 5 gal. for isolated installation, gas stations, drug stores, doctors' offices, etc. Empire styling. (Illustrated below.) Two new table top models for use in electric kitchens; 15 gal. and 30 gal.; porcelain or monel top with standard backsplashers; styling matches range and refrigerator. Corox heating units, special cold water baffle. Westinghouse Electric & Mfg. Co., Mansfield, Ohio.

●

OTHER makes having western distribution but which have not announced any material changes in design over last year include Clark (McGraw Electric), Fowler, G. E., Hotpoint, L. & H., Sepco (Automatic), Thermador, Universal, Wesix, and Woolwine. See Manufacturers Directory for Western representatives.

●

Washers and Ironers

Styling, and light colors continue the trend in new washer design, with varieties of agitators offered by each manufacturer, seeking fast washing action and less wear on clothes. Wringers all feature safety releases and large soft rolls. Ironers show few changes except in minor details. Brief review of new features follows. See Manufacturers' Directory in this issue for western representatives who will furnish full information.

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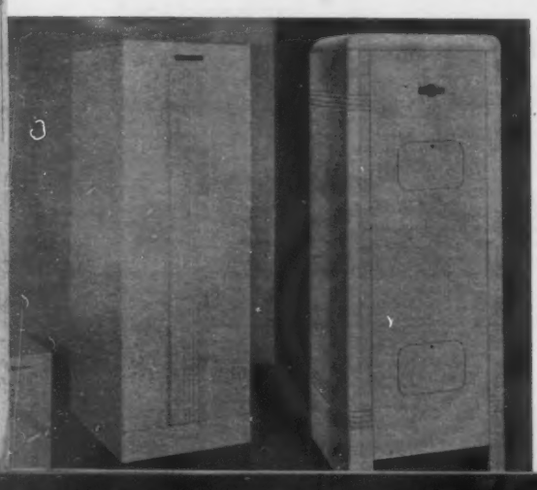


ABC—New spinner 177, and 3 wringer types. Porcelain tub with four sets of deeply embossed flexers. French type agitator with rubbing surfaces on wings and base. Two point suspension spinner basket, revolving turret head to return suds to tub or trays. Ironers—Three new models; deluxe cabinet type with thermostatic control, two speed roll, etc.; cabinet ironer whose top swings at right angles to provide shelf; "roll-around," fully automatic. Altorfer Bros. Co., Peoria, Ill.

●

APEX—New models not yet announced. Full line washer and ironers. Apex Rotarex Mfg. Co., Oakland.

●

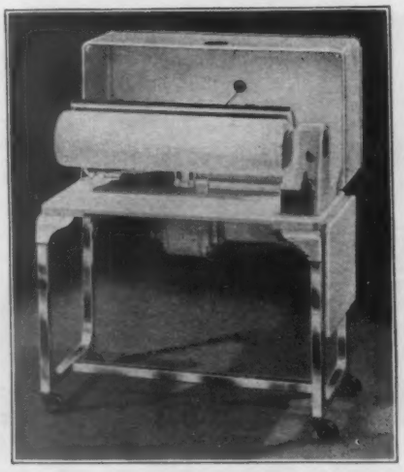
AUTOMATIC—Deluxe washer, with new "safety button" wringer, stops both rolls, disconnects power. Invertible "duo-disc" agitator for either top or bottom washing. Bullet shaped white porcelain tub, 18 gal. capacity. (Picture 1.) Other features. Four other models, two with gas engine. "Save-a-day" Ironer, deluxe model 54 (picture 1), companion to the above washer. Automatic Washer Co., Newton, Iowa.

●

BARTON—New model LB, patented convoluted enamel tub with special water action (picture 2). Line includes six models, and an ironer; prices ranging from low to medium. The Barton Corp., West Bend, Wis.

●

CONLON—Four new models. Model 19-7, illustrated, has 6-vane tangle proof agitator, deluxe wringer with reset lever, 6 position drain board, rubber hose drain with suction cup. Pump models extra. Ironers—3 cabinet, 1 open model. Two-speed control, double thermostat—split heating element maintains heat in either half of shoe on M7 and T7 models (illustrated below). Conlon Corp., Chicago.



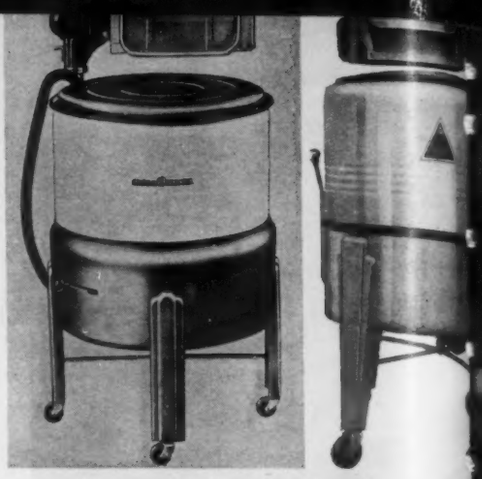
Conlon—cabinet

●

CROSLEY—New models not announced as yet. Crosley Radio Corp., Cincinnati, Ohio.

●

EASY—Celebrating its 60th anniversary with white, stream lined washers. (Picture 3.) Four washers, 4 ironers. Washers feature "turbolator" 3-zone action. New safeguard wringer and self-reversing drainboard. Available with or without pump. Ironer—finger tip and knee control, other



General Electric

Haag Vorte

Easy features. (Picture 2.) Easy Washing Machine Co., Syracuse, N. Y.

●

FAIRBANKS-MORSE—New models not yet announced for 1937. Fairbanks-Morse Home Appliances Inc., Chicago, Ill.

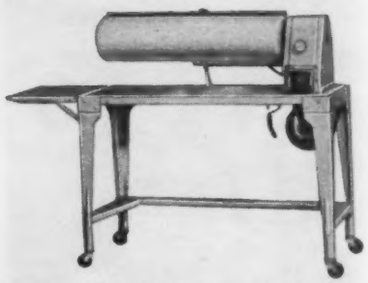
●

GENERAL ELECTRIC—Time Saver, new low priced model, with activator, pump, Lovell heavy duty wringer. Ironer—New rotary type, in two models, one with adjustable thermostat and table top. Roll moves to shoe and then starts rolling; can be stopped for pressing. Non-lubricating mechanism. General Electric Co., Bridgeport, Conn.

●

HAAG—New Vortex model, ivory enamel tub, center drain, with multiflush agitator, new wringer with "mechanical hand safety feeder" in addition to safety release, clutchless wringer head assembly, other features. Haag Bros. Co., Peoria, Ill.

●



HORTON—New "Kleen-zoning" design of agitator which keeps bearing out of water, has raised sediment zone, brush for cleaning tub and agitator. Deluxe model has hexagonal tub case, corrugated interior tub, push-pull safety release bar wringer, floodlight, etc. Ironers feature new construction of shoe under 40 ton pressure. Six models. Double thermostat, tilting shoe for spot pressing, etc. Horton Mfg. Co., Fort Wayne, Ind.

●

HOTPOINT—Five lines of washers and two automatic rotary ironers, in standard and deluxe models, and wringer post ironer. (Picture 4, 5 washers, 3 of ironers.) Washers feature three-zone washer action. Wringer and spinner types, modern styling. Lovell safety wringers. Pump on some models. Ironers have roll that moves to shoe. Control and safety features. Edison General Electric Appliance Co., Inc., Chicago.

●

KELVINATOR—Seven models, 5 wringer, 2 spinner. All corners eliminated in design of washer. Adjustable wringer tension button, safety release. Agitator design for few or full tub of clothes. One spinner model features hot filtered water rinse connection to spinner, eliminating separate rinse. (Pictures 7, 8.) Variety of finishes. Ironers—concentrated heat, super-hard shoe, spot and sponge plate, selective knee lever, both ends open, pressing control. Four models, 1 wringer post, 2 table, one cabinet. (Picture 4.) Nash-Kelvinator Corp., Detroit, Mich.

●

IRONRITE—New models not announced. Ironrite Ironer Co., Detroit, Mich.

●

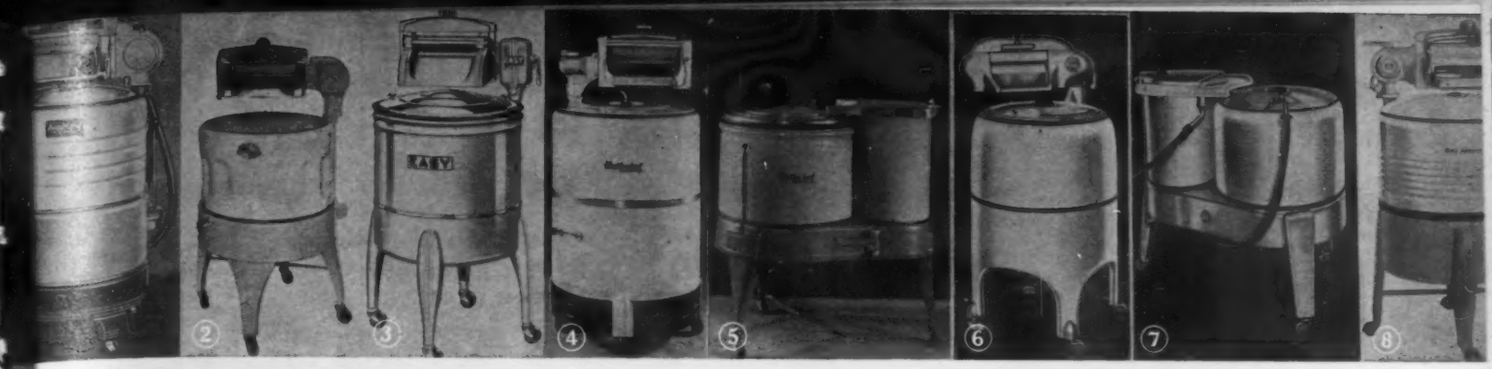
LITTLE GIANT—Tray washer. New model announced last fall. (See Elect. West, Nov., 1936, p. 65.) Little Giant, Inc., Oakland, Calif.

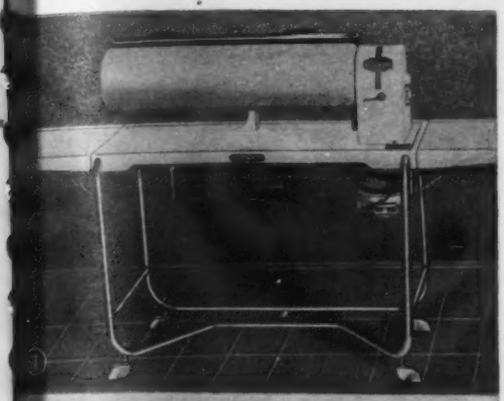
●

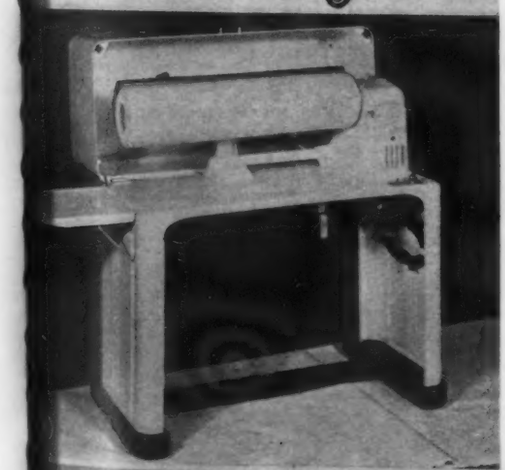
MAYTAG—New models not announced. Maytag Co., Newton, Iowa.

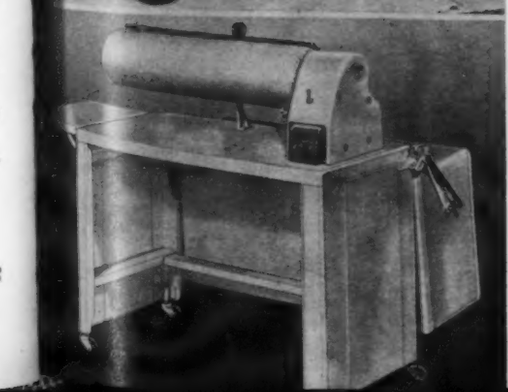
●

MEADOWS—New models not announced. Meadows Mfg. Co., Chicago, Ill.

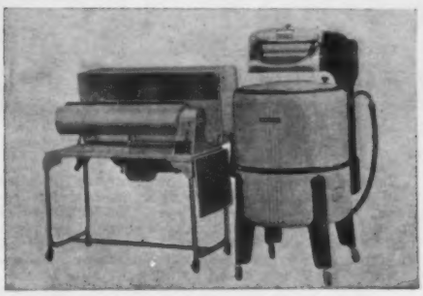








● NORGE—Matched combination laundry units; six washers, three available with gas engine; seven ironers. White refrigerator porcelain tubs, Lovell wringers, with pressure indicator, safety releases. Ironers include new hand press ironer. Roll ironers feature dual-end roll, -speed, -control, -heating units, -thermostat, -pressure tensions. Scratch proof shoe. Divided heat elements. Other features. Norge Division, Borg Warner Corp., Detroit, Mich.



● ONE-MINUTE—Five new models, white, modernistic design. Model 448 (picture 8) has exclusive leverless aluminum wringer with complete control from top bar. Other models with Lovell safety wringers. Other features. One Minute Washer Co., Newton, Iowa.

● THOR—"Gentle hand" design agitator in deluxe models, ordinary agitators in others (55 models of washers and ironers). Three-color finish, other new features. Ironers—"Stow-a-way" folding cabinet ironer featured. Many other models. Hurley Machine Co., Chicago, Ill.

● UNIVERSAL—No new models announced. Landers Frary & Clark, New Britain, Conn.

● VOSS—New models not announced. Voss Mfg. Co., Davenport, Ia.

● WESTINGHOUSE—New low priced Golden Jubilee Special, with safety wringer, three wing Lynite turbulator, corrugated tub, other features. Full line of washers and ironers. 1937 models not yet announced. Westinghouse Electric & Mfg. Co., Mansfield, Ohio. (Picture below.)

Clothes Dryers

● DESERTAIRE—Infant Wardrobe Cabinet—Semi-portable, walnut cabinet; and de'uxe model on rubber tired castors. Designed to keep warm and sterile infant's apparel 24 hr. a day. White metal shelves, high and low selector switches, night light. Larger model also contains circulating heater to warm surrounding air while baby is bathed. Gill Electric Mfg. Co., Redlands, Calif.

● WESIX—Drying an average wash in 30 to 50 min. Cabinet 5 x 6 x 2 ft., double door, contains 12 removable rods, 3 small rods, on which clothes hang. Wesix heating element in intake, 4 kw. 230 volt. Fan exhaust for moisture laden air in base. Lists $190 f.o.b. factory. Wesix Electric Heater Co., San Francisco.

Vacuum Cleaners

● APEX—Model 105, forward rotating brush. 1/5 hp. a.c. or d.c. motor, glove fitting handle, pressure nozzle adjuster, 19 lb. Sold in combination with Model 141 hand cleaner, 5½ lb. Apex Rotarex Corp., Oakland, Calif.

● ROYAL—Three restyled Super Grand models, semi-streamlined. Super grands have new headlight, 2 speed motor, Compo bearings in motor, brush, wheels. Other features. Deluxe models offer features. P. A. Geier Co., Cleveland, Ohio.

● MAGIC-AIRE—Cylindrical, streamlined mechanism on 4 castors, with "magic wand" of aluminum on a hose, with variety of attachments. 500 watt motor, two stage fan, dust bag in cylinder ahead of fan. Foot operated toggle switch. Two models. Cleveland Suction Cleaner Co., Cleveland, Ohio.

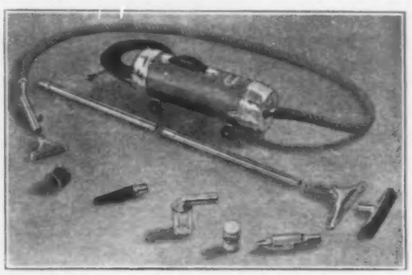
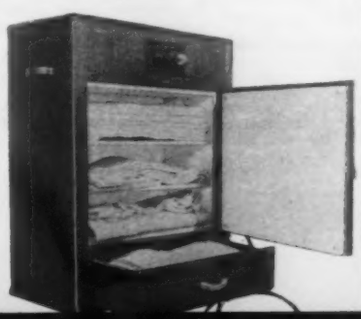
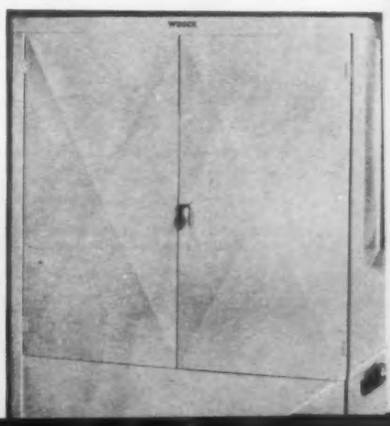


Table Cookery

● ROLLERMAID—Enamel finished, metal movable table on rubber castors, equipped with 4 cu. ft. cabinet for storing pots, pans, soiled dishes, electric appliances; drop type door. Three built-in electric outlets. Long pull-out cord connects with

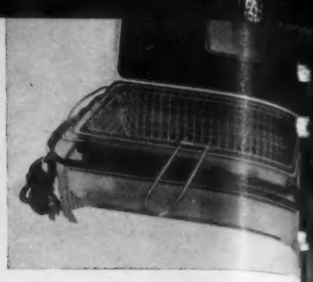




← ROLLER MAID

↑ NESCO BROILER

SILEX COFFEE SERVICE



MARION DEEP FRYER

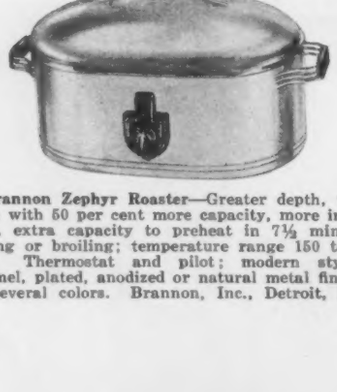
baseboard outlet. Top 20 x 30 in., 30 in. high. Several color combinations. Fowler Corp., Portland, Ore.

Brunchboard—Several well styled tables, either in modern plastics and metal, or hardwoods, with enclosed unit electric hot plate built into center. Table top in some models slides over hot plate when not in use. Designed for entertaining or small apartments or offices. Connects to convenience outlet by long cord. Extra outlet for table appliance. Brunchboard Table Co., Western Furniture Exchange, San Francisco.

Compact-Rangette—Everhot table range, with separable oven. One round surface unit, one square 1100 watt unit under vent; three-heat switch control. Broiling, toasting done in drawer under square unit. Oven holds 10 lb. roasts; insulated, with heat indicator, double wall door. Far West list, $28.50. Swartzbaugh Mfg. Co., Toledo, Ohio.

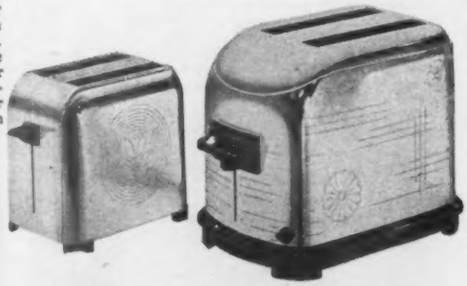
Nesco Boiler—Attachment for any Nesco 11 qt. electric roaster, for broiling steaks, chops, etc. Removable heat reflector and four position bake and broil rack. Provides visible broiling. List $3.50. National Enameling & Stamping Co., Mil- Hartford, Conn. (Picture above.)

Proctor Roast-or-Grille—New model with thermostat, for either d.c. or a.c. operation. Includes former features of broiler element in lid, removable; and heat control, pilot light, on roaster. Several accessories and design features unique. Proctor & Schwartz Electric Co., Philadelphia, Pa.



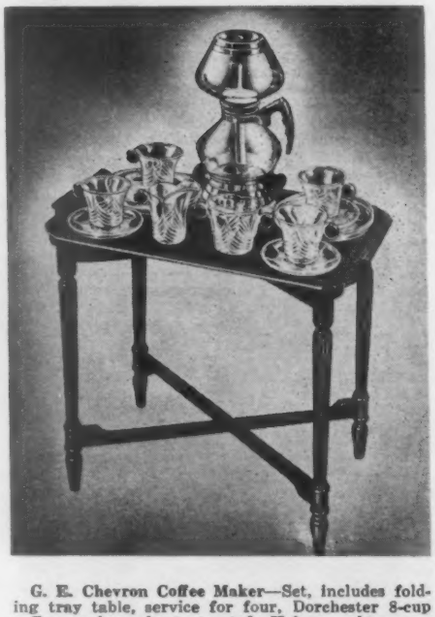
Brannon Zephyr Roaster—Greater depth, wider ends with 50 per cent more capacity, more insulation, extra capacity to preheat in 7½ min. for frying or broiling; temperature range 150 to 550 deg. Thermostat and pilot; modern styling; enamel, plated, anodized or natural metal finishes, in several colors. Brannon, Inc., Detroit, Mich.

Marion Deep Fryer—Automatic temperature control, 1600 watt, with element wound around sides of main unit. Separate fat container can be stored in refrigerator with fat in it between uses; holds 3 lb. lard or fat. Mesh insert and cover. Rutenber Electric Co., Marion, Ind.



Toastmaster — New 10th anniversary 2 slice toaster, modern styling, flexible toast timer, reduced tension on starting lever, less noise when operating or when toast pops up. Chromium plated. List $16. "Junior" 2-slice model to sell at $7.50, hand operated, not automatic. "Hospitality Tray" new design, with automatic toaster, or waffle baker, automatic controlled. McGraw Electric Co., Minneapolis, Wis.

Silex Coffee Service—Eight-cup Silex coffee maker, Moldex decorated shell, creamer, sugar, and snack tray. Choice of red or black. Either electric range model or table model. Latter has new stove design, Moldex handle. Silex Co., Hartford, Conn. (Picture above.)

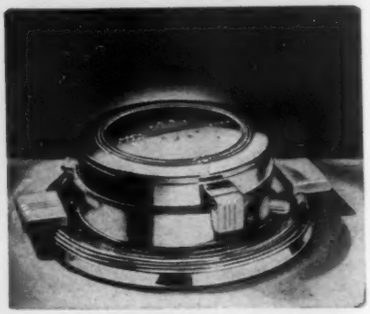


G. E. Chevron Coffee Maker—Set, includes folding tray table, service for four, Dorchester 8-cup coffee maker, heat treated Heissey glassware, pressed wood tray. Glass cups have black plastic inserts in handles. Chromeplate stove. List, with tray, $19.95; folding tray table $4 extra. General Electric Appliance & Merchandise Dept., Bridgeport, Conn.

Cory Coffee Brewer—Six sizes, from 4- to 12-cup bridge model. Five models have decanter cover on lower glass for use after top glass removal. Two-heat stoves. Stand for upper glass. Fast flow filter, etc. Glass Coffee Brewer Corp., Chicago, Ill.

Royal-Rochester—New coffee maker display, features Royal-Rochester coffee maker "signal control". Appliances adequately supported. Display furnished with purchase of 4 coffee makers. Robeson-Rochester Corp., Rochester, N. Y.

Universal—New "Walnut Hill" matched appliances in popular price range, include toaster, percolator, grill, waffle iron, urn set. Chromium plated, walnut handles. New coffee percolator display, flashing on phantom view of interior. Free with 12 assorted appliances. Landers, Frary & Clark, New Britain, Conn.



G. E. Waffle Iron—Raleigh model, automatic, chrome plate, ivory handles. Heat control, signal light, other features. General Electric Appliance & Merchandise Dept., Bridgeport, Conn.

Irons

G. E. Super R—Non-automatic, 6 lb. iron, with Calrod unit, heat indicator with fabric marked plate, button nook, heel stand. Chrome with red handle. List $3.95. 575 watt, a.c. General Electric Appliance & Merchandise Dept., Bridgeport, Conn.

Durabilt Folding Travel Iron—Full size sole plate, with folding handle, fits in wine colored suede traveling case with slide fastener 6 ft. cord. 2½ lb. Full size handle. 420 watts, a.c. or d.c. List, $395. Winsted Hardware Mfg. Co., Winsted, Conn.

Manning Bowman Iron—Winner of third prize in first annual modern plastics competition for design of Bakelite handle and heat control knob on basis of efficiency, insulation and beauty of line. Full automatic, 1000-watt iron. Manning Bowman & Co., Meridian, Conn.

Brannon Cord-less-matic—With cord attached to stand, streamlined iron, in black, green, red or chromium trim, provides 40 per cent more sole area. Special heat distribution in design of sole plate. Thermostat to cut off current. Temperature indicator on iron. No heel. Special cool handle design. Brannon, Inc., Detroit, Mich.

News of the Industry

FRESNO VOTERS CRUSH MUNICIPAL OWNERSHIP PROPOSAL DESPITE PRESS CAMPAIGN—TULARE DOWNS SIMILAR ISSUE

By an overwhelming margin which exceeded two to one, voters of Fresno, Calif., turned down a $2,990,000 bond issue for the purchase of the local distributing facilities of the San Joaquin Light & Power Corp. in a special election Feb. 25. A total of 18,610 voters (73.9%) of the city's 25,200 registered electors went to the polls, casting 12,584 votes against the bonds to 6,026 in favor. In only three of the 83 precincts did the bonds receive the necessary two-thirds majority.

The bonds were soundly defeated in the face of a vituperative and hysterical campaign waged in their favor by the Fresno *Bee* and its radio station KMJ, the only daily newspaper and radio station in the community. Possible reasons advanced for the decisive defeat of the bonds were that the *Bee* overplayed its hand and that the vigorous and open campaign using employees, billboards, newspaper advertising and radio conducted by San Joaquin Power convinced the electorate that no benefits would accrue to the public through a change in ownership.

TULARE'S "municipal-ownership" mayor resigned Feb. 25, after that California city voted down a proposed $400,000 revenue bond issue for acquisition of the Southern California Edison Co.'s distribution system by a vote of 866 to 737. Proposed condemnation failed by 854 to 740.

SAN FRANCISCO TO VOTE

The Federal government extended its long arm to put a finger into local politics last month, when Secretary of Interior Ickes voiced an opinion as to how San Franciscans should vote on a $50,000,000 revenue bond issue. The election was set for March 9, proposing a charter amendment for purchase, condemnation or duplication of the Pacific Gas & Electric Co.'s distribution system within the city.

Secretary Ickes said voters had a legal and moral obligation to approve the bond issue in order to comply with provisions of the Raker Act.

Power generated along San Francisco's Hetch Hetchy water supply system, located partly in Federal property, has been sold for more than ten years under agreement to P. G. & E., which distributes. Already receiving extremely low rates, San Franciscans, should they approve the issue, will receive little more for their $50,000,000 than the privilege of reading "municipal" on their monthly bill. Earlier proposals to issue municipal bonds have been voted down.

●

FOURTH RATE REDUCTION in two years for the San Diego Consolidated Gas & Electric Co., saving electric consumers $311,214 a year, will become effective March 15. Domestic users will benefit to the extent of $119,632, street lighting rates will drop $9,656. On a monthly consumption of 60 kw.-hr., the new charge will be $2.59, 24 per cent under the former $3.39.

END OF A THREE-YEAR INVESTIGATION of the Utah Power & Light Co.'s rate fixing structure by the State Public Service Commission is in sight. Final testimony has been ordered by March 29.

●

HEARD by the Arizona Corporation Commission last month was testimony concerning payments by the Tucson Gas, Electric Light & Power Co. to its holding company, Federal Light & Traction Co., New York, in connection with rates of the Arizona company.

●

ODD SNOW IN CALIFORNIA

Freak snows in California, decreasing with increased elevation from a maximum at 6,000 ft., are reported in the Feb. 1 cooperative survey of the State Department of Public Works. The total pack is reported above normal, heaviest in the South.

North of Merced River the pack is generally 35 per cent below normal at 8,000 ft., 15 per cent below normal between 7,000 and 8,000 ft., 15 per cent above 1936 between 6,000 and 7,000 ft., while below 6,000 ft. lies a 150-per-cent surplus. All elevations together yield a total for the region 25 per cent greater than at the same time last year and 20 per cent above seasonal normal. South of Merced River, compared to last year, the accumulation increases from 140 per cent in the San Joaquin basin to 190 per cent in Kaweah basin.

Precipitation on both sides of the Sierra is reported ranging from 80 to 190 per cent from Truckee basin south to Owens Valley.

●

SEEK MORE AUTHORITY

Greater powers for the Colorado Public Utilities Commission are the intent of a series of bills introduced into the state legislature. Proposed measures contemplate:

Regulation and supervision by the Commission of relations between public utilities and affiliated concerns, including holding companies; payment by utilities of expense of valuation proceedings by the P.U.C. not to exceed four percent of the company's annual revenues; conferring on the P.U.C. power to regulate and control issuance of bonds and stocks by public utilities; provision that utilities must file complete lists of stockholders of voting stocks, and forbid directors from delegating their management powers to affiliate companies.

●

KING COUNTY, Wash., will vote on no public utility district until 1938, the State Supreme Court ruled last month. Despite similar rulings in lower courts, attorneys for the proposed district, which is backed by the Grange, went to the highest State tribunal in an effort to secure a vote in the March 9 election.

PACIFIC GAS & ELECTRIC OFFERS TO BUY ENTIRE OUTPUT OF CENTRAL VALLEY'S KENNETT DAM

An offer by the Pacific Gas & Electric Co. to buy all electric power generated by the Kennett hydro plant of the Central Valleys Project in California was forwarded last month to the State director of public works. President J. B. Black accompanied the offer with a statement the company will cooperate fully in development of the project.

Because recovery in northern California is so far ahead of forecasts, P. G. & E. will require 400,000 kw. of additional capacity, Black said. In 1933, existing plants plus Boulder Dam were estimated to be sufficient to supply all demands until 1943.

"In so far as our present program of obtaining additional power is concerned," Black said, "we will revise said program so that the entire power output of the Kennett plant can be absorbed into our present market at the earliest practicable date."

Aqueduct Artery

Photo courtesy Lincoln Electric Co., Cleveland, Ohio.

This is not the remains of a prehistoric monster. Rather, it is the ultimate in modern fabrication by means of electric arc welding. It is the intake for Gene pumping station of the Metropolitan Water District which eventually will handle a billion gallons of water daily. The manifold was fabricated in the shops of the Consolidated Steel Corp., Los Angeles

P.C.E.A. Reveals Convention Plans

A vivid panorama of electrical progress will be unfolded to the Pacific Coast Electrical Assn., when it gathers for its first convention in five years, May 20 and 21, at Huntington Hotel, Pasadena. Abandoning the stereotyped convention plan, President Fred B. Lewis proposes to climax a year of progress, built around the theme, "Maintaining Leadership", with a program of intensive interest.

Since last October, the convention committee has been formulating plans for a meeting which would impressively demonstrate the industry's leadership. Each section of the Association will present a project, dealing comprehensively with a phase of the industry and its value to the public.

The Operating Economics Section, under A. L. Copley, will present "Electrical Magic in Industry." It will be in two parts, the first a lecture and demonstration covering research by a large manufacturing company, the second an "olio" in which engineers and specialists will demonstrate actual devices.

For the Administrative Services Section, Chairman R. E. Fisher will present at the luncheon program a speaker from without the industry who will speak on problems which affect all sections.

The Business Development Section, under A. H. Nicoll, will, like the morning meeting, present a two part program. "Lighting" will be dealt with first by a presentation of new light sources, many to be shown for the first time, and second by a showing of practical applications. A postscript to this program will be devoted to insect control, with a representative of the University of California offering "Electrical Magic in Agriculture."

Friday's program has not yet been announced, except that it will be climaxed with a speechless banquet and big show, followed by dancing. Among outstanding attractions will be extensive exhibits of new industrial equipment and an "Art Gallery", planned to recall impressions of offices, equipment, people, etc., as they were when the P.C.E.A. was founded twenty years ago.

On Saturday the principal parts of the convention will be repeated for an audience of "customers", selected strictly by invitation.

Richard E. Smith, executive assistant of Southern California Edison Co. and convention chairman, characterizes the program as comprising a brief survey of the past, a comprehensive analysis of the present, and an optimistic appraisal of the future, with emphasis throughout on the industry's contributions to the public welfare.

●

Northwest Association Business Group to Meet

Round table discussions of sales will occupy a full day of the Business Development Section, Northwest Electric Light & Power Assn., when it convenes for its annual meeting at Hotel Utah, Salt Lake City, March 25 to 27. Davis M. DeBard, sales committee chairman, Edison Electric Institute, will make the opening address.

Following the conferences, committees will report to the general session, according to Section Chairman George H. Wisting. Among speakers at general sessions will be George M. Gadsby, Utah Power & Light Co., association president; W. C. Mainwaring, B. C. Electric Railway Co., vice-president; George C. Tenney, editor, ELECTRICAL WEST, and Adam S. Bennion, Utah Power & Light Co.

●

$200,000 Offered by Lincoln Arc Foundation

To stimulate intensive study of arc welding, The James F. Lincoln Arc Welding Foundation announces that it will distribute $200,000 among those submitting the 446 best papers dealing with welding as a primary process in industry. An individual may submit but one paper.

Similar prizes are offered in eleven divisions. These are: automotive, aircraft, watercraft, structural, furniture and fixtures, commercial welding, containers, welderies, functional machinery and industrial machinery. The principal prize winner will receive not less than $13,700, the foundation says.

Each division is subdivided. For instance: automotive — engines, bodies, frames and trailers. Details of awards were announced to be:

Each paper will compete for five initial prizes in the subdivision. These are worth $700, $500, $300, $200 and $150. From these winners, four papers in each major division will be selected to receive $3,000, $2,000, $1,000 and $800, respectively. These semi-final winners will be considered as possible recipients of four main prizes ranging from $10,000 to $3,500.

Papers must deal with redesign or new design to include welding in the manufacturing process, and the contestant must have participated in work on the subject. Papers must be on file by June 1, 1938, and prospective entrants should communicate promptly with Foundation Secretary A. F. Davis, P. O. Box 5728, Cleveland, Ohio.

●

DETAILS OF THE MODERNIZATION to be undertaken at Station L have been announced by Portland General Electric Co. Installation in May of a new Babcock & Wilcox type F, integral furnace boiler will make available full machine capacity of 75,500 kw. with 80,000 kw. for peaking. The boiler, for oil burning only, will deliver 225,000 lb. per hr. at 425 lb. pressure. Boiler modernization last fall added 11,400 kw.

●

VALMONT GENERATING PLANT of the Public Service Co. of Colorado will be raised from 40,000 to 70,000-kw. capacity with the addition of a new boiler to cost $620,000. This unit is in addition to the $3,688,410 construction program for 1937, announced last month.

Federal Power Commission Makes Annual Report

Several new functions, authorized in the Federal Power Act of 1935, were assumed by the Federal Power Commission during 1936, according to the commission's sixteenth annual report to Congress.

These included: division of the country into regions for voluntary interconnection of facilities; supervision of interstate energy rates; financial jurisdiction over utilities engaged in interstate transmission and sale; cooperation with state commissions; adoption of a prescribed system of uniform accounts; consideration of 800 applications seeking to prevent interlocking directorates. The commission's staff was reorganized into four bureaus (Administration, Law, Engineering, and Finance and Accounts), and regional offices were established in five cities, including San Francisco and Denver.

●

Contracts Awarded For Boulder Equipment

Contracts for manufacture and installation of Boulder Dam powerhouse equipment, to be used with the two 115,000-hp. generating units serving the Metropolitan Water District, have been awarded by the Department of the Interior. Bids total $232,159.31.

The awards are: to Westinghouse Electric Mfg. Co., Denver, 3,000-amp., 23,000-volt bus structure at $107,581.92 and two 600-amp., 15,000-volt oil circuit breakers at $10,134.44; to Allis-Chalmers Mfg. Co., Milwaukee, two 23,000-volt, 4,000-amp., vertical lift type oil circuit breakers at $114,442.95.

●

LICENSE TO BUILD a power plant on Clark Fork of the Columbia River has been granted the Pend Oreille Mines & Metals Co. by the Federal Power Commission. Planned are an intake above Metaline Falls, a 600-ft. tunnel, a 2,000-h.p. power house below the falls and a 3,000-ft. transmission line.

APPLICATION OF HUGH L. COOPER, New York City, to build a hydroelectric plant at Z Canyon on Clark Fork of the Columbia River, has been denied by the Federal Power Commission. It was filed in 1931, proposed a dam, tunnel and powerhouse permitting capacity up to 650,000 h.p. The application failed to guarantee completion within periods required by Sec. 13, Federal Power Act, the commission believed.

●

TESTALINDA, B. C., soon will be supplied with electricity by The West Kootenay Power & Light Co. A line from Oliver was erected following petition of Testalinda residents.

The Standard News

March 1937 — Electrical Edition

Published by THE STANDARD ELECTRIC STOVE CO., Toledo, Ohio

For Every Demand

Every quality demanded of a modern cook stove is found in Standard Electric Ranges. These ranges are supplied in all standard sizes and capacities to meet every demand which has to this date appeared on the market.

Once installed these ranges are sure to give many years of uninterrupted service, for our records show many ranges in use over 25 years and still going.

Catalog No. 37, just issued, shows a complete variety of models to take care of every cooking need. For instance, there are two models with two ovens; one of these ranges is 54 inches left to right and one is 45 inches. Each has an 18-inch oven and each a 16-inch oven. Then there are two models to sell to rural or suburban prospects who have been using their kitchen stoves for heating. These are combination electric-fuel ranges.

There is also a variety of domestic type ranges from the small Jewel Box to the largest D-701 taking in every step of the demand. CHARLES A. PIERSON.

This brings to the market for the first time a heavy duty range at a price that the small wayside stand can afford. This makes for the first time a complete, excellently engineered series of ranges that can be expanded into cooking capacity for a large restaurant. It is especially adapted for use in diet kitchens, recreation rooms, servants' quarters.

KALMAX (No extra charge)

Only on Standard can you get KALMAX enclosed burners. This is Standard's own burner, the result of the longest exclusive engineering experience in the industry. A remarkable thing was revealed in a recent check up. Only about one in three months is a Kalmax burner replaced in the whole United States, or about four per year for all in use. There has been no constant "sampling" of something "new" in KALMAX. KALMAX was accurately engineered and the bugs worked out first. The housewife gets the benefit of good design, by freedom from burnouts.

For More Heavy Duty Business

The picture shows two commercial ranges No. 818 with a section No. 8 between them. No. 818 is a complete range which may have any combination of cooking tops, including circular open or enclosed plates, flat plates or griddles. This series of ranges is designed for use in barbecues, tea rooms, wayside stands, dine and dance places, where the service is too heavy for a domestic range but too light for the large commercial ranges. The price per section is just about the same as a regular domestic range.

Sell Standard This Year

If you are not now selling electric ranges, or if you want to sell a line that covers every phase of electric cookery and water heating, write today for the Standard Plan—a complete plan to place ranges in the users' kitchens, with profits for you and your salesmen.

Write Today To

THE STANDARD ELECTRIC STOVE COMPANY

Toledo, Ohio, U. S. A., Dept. C

UNITS OF PROPERTY, a list prepared by the Federal Power Commission, specifies whether units which are replaced, added or retired shall be entered in plant accounts or charged to maintenance. Effective Feb. 1, the list is for use with the Uniform System of Accounts prescribed for public utilities. According to Chairman Frank R. McNinch, the list may be expanded by any public utility, but not condensed.

●

Complications in Ogden Municipal Issue

While Utah Power & Light Co. had on file in the state supreme court a petition to stop Ogden from issuing revenue bonds to construct a municipal power plant, the City, before filing its briefs, adopted a revised ordinance designed to meet the company's objections.

Adoption of the revised ordinance roused objections from another quarter. Twelve residents filed a petition seeking referendum on the ordinance at an election Nov. 2. Questioned was the right of the city to adopt a revised ordinance while the previous referendum was pending.

Wholesalers Attend Record Meeting

Electrical wholesalers of the Pacific Coast staged the biggest meeting in the history of their association last month,

B. S. MANUEL

when 140 delegates convened at Hotel Del Monte. To counteract higher operating costs, due largely to higher taxes, the organization launched a program to secure either longer margins or increased selling prices from manufacturers.

The effect of recent federal and state legislation on sales policies was discussed in a paper by H. W. Biddle, of the Biddle Trade Bureau, Los Angeles. Speakers and their subjects included: E. O. Shreve, vice-president and sales committee chairman of the General Electric Co., national labor conditions; A. I. Appleton, president of Appleton Electric Co., Chicago, wholesalers responsibilities and the danger of consumer cooperatives; R. E. Fisher, Pac. Gas & Electric Co. vice-president, a 7.6-per-cent increase in 1937 appliance sales; L. A. McArthur, Pac. Power & Light Co. vice-president, public regulation of power company sales efforts; J. E. E. Royer, Washington Water Power Co. vice-president, promoting modern kitchens; A. C. McMicken, Portland General Electric Co. sales manager, effect of Federal power projects; W. H. Hodge, sales director, Public Utilities Engineering & Service Corp., the need for a national adequate-wiring campaign.

Elected division chairman for 1937-38 was B. S. Manuel, Los Angeles district manager, Westinghouse Electric Supply Corp. Next meeting will be at Del Monte, June 17-19.

●

STRICT ENFORCEMENT of the Los Angeles ordinance regulating sale of electric appliances is urged in a resolution adopted by the Los Angeles Electric Club. Purpose of the ordinance is to prohibit sale of poorly constructed devices. It already has deleted many inferior appliances from the market.

●

HIGHWAY LIGHTING modernization will begin in Denver this month with the installation of sodium units to illuminate the Eighth Ave. overpass. Twenty-three, 10,000-lumen Westinghouse units will be staggered at 150-ft. intervals 30 ft. above the roadway. Two other sodium vapor installations are in prospect, one to light Park Ave., now being widened.

●

OSOYOOS MINES LTD. has contracted with Reston Electric Co., Vancouver, for electrification of their property. The West Kootenay Power Co. has completed a 20,000-volt transmission line from Oliver to Osoyoos. The Reston contract includes supply and installation of transmission line, outdoor transformer station and motor equipment.

●

EMPLOYEES of the El Paso Electric Co. are being offered store room cost prices on electric ranges, water heaters and refrigerators with 36 months to pay.

HEMINGRAY Glass INSULATORS

for primary and secondary insulation service and rural line needs.

Brass-bushed for great strength, perfect threads and full protection against pin expansion.

Hemingray provides many advantages: greater mechanical strength . . . sustained dielectric strength . . . unaffected by sudden temperature changes . . . withstands maximum insulator pin expansion . . . never ages or deteriorates . . . all surfaces impervious to moisture . . . tougher—withstands rough handling . . . clear and flawless for easy inspection.

Available in all styles . . . clear or brown glass . . . ratings up to 15,000 volts. Write for samples.
Owens-Illinois Glass Company . . . Muncie, Indiana.

Southern League Makes Promotion Plans

Enthusiasm ran high at the Hamilton Club, Los Angeles recently, when 300 members of the industry turned out for the banquet sponsored by the Electrical Development League of southern California. League President A. E. Hitchner sounded the keynote of the meeting in his opening address, "The Opportunity for the Electrical Industry."

To help build membership, the League presented those in attendance with a booklet "Forward Electrical Industry" which outlines 1937 promotion plans aimed to take full advantage of southern interest in electrification aroused by Boulder Dam.

Assisting President Hitchner are the following officers and committee chairmen: Ross Hartley, vice-president; William E. Cranston Jr., secretary; A. L. Stone, finance; Burrell S. Manuel, membership; H. D. Conklin, domestic; Ernest Alberts, commercial cooking and baking; G. N. Hawley, industrial power and heating; John Duncan, wiring; Ira P. Fulmor, air conditioning; T. H. Shepherd, commercial and industrial lighting.

●

DRAMATIZING THE SELLING of electric water heaters, Edison General Electric Appliance Co. has prepared a slide film with sound, entitled "The Magic Faucet." This complete Hotpoint presentation is used for sales training and organization meetings.

●

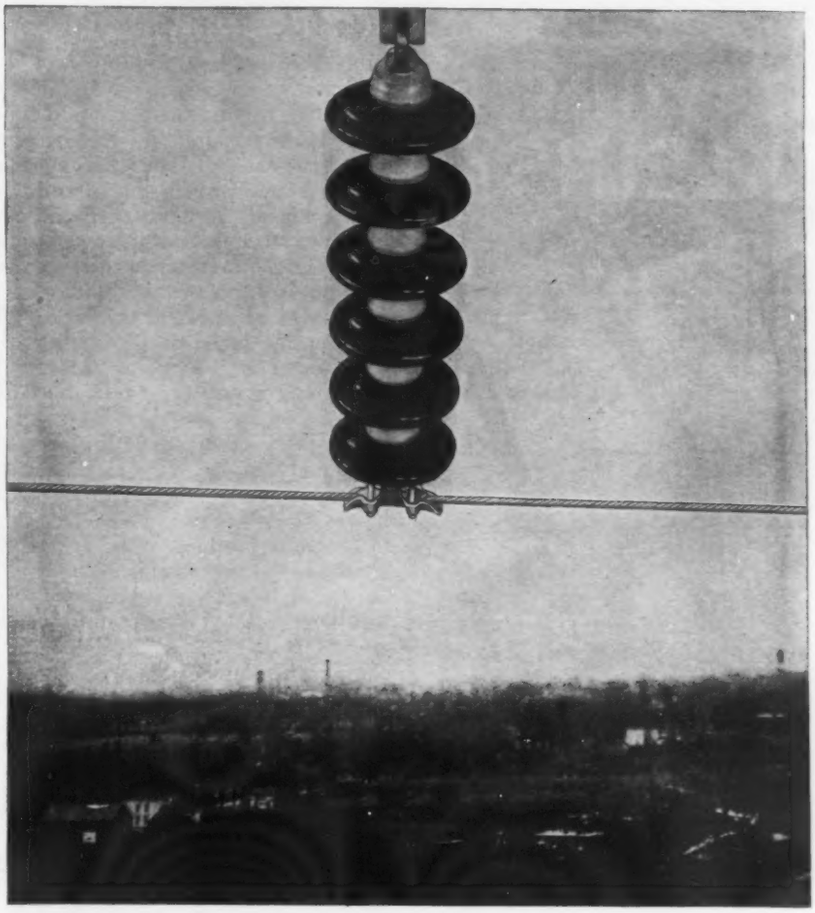
BUILDING SALES in the territory where the proportion of homes wired for electricity is already highest in the nation was the problem which concerned 200 delegates to a sales conference in Newhouse hotel, Salt Lake City, Feb. 15 to 19. They were representatives of the Utah Power & Light, Western Colorado Power, and Bountiful Light & Power Companies. W. A. Huckins was general chairman. Established was a goal of raising consumption per customer from 800 to 1,000 kw.-hr.

●

VICTORIA STREETS will be electrically decorated during the 75th anniversary celebrations, planned for 1937. The Junior Chamber of Commerce of the city will handle arrangements for the illumination program, receiving cooperation and practical support from the City Council. A plan is afoot for presentation of prizes for the best decorated and illuminated store, according to size.

●

THREE HUNDRED FOOT-CANDLES of illumination in the show windows of the Little Bear Delicatessen on Geary St., San Francisco, marks a new high in indoor illumination for a small store, but results are proving the value of this advertising with light.



This photograph was taken in our studio. (Background effect obtained by paper negative, half-printed in.) The string is in duplicate of one in actual use on a prominent line. Details of line may be had upon request.

Hardware Used

BTC Drop Forged, 3001 Hook
BTC Drop Forged Caps
BTC Drop Forged, 6203 Clamp
with aluminum liners

For uniform metal
For added strength
For dependable lines
Specify Drop Forgings

If it's Hi-Line Hardware - it's in this Book

. . . Sold through Your Insulator Mfr. Only

The Brewer-Titchener Corp.
Cortland, New York

No. 201 N. E. Klein Side Cutting Plier. "Streamlined" for use in confined spaces.

Good workmen demand good tools. In the hands of men who know — everywhere — the pliers are invariably Kleins. Only the keen, hand-honed, perfectly matched cutting knives of Klein Pliers — only the comfortable spring grip in the Klein handles — only the general all around quality that is an inherent part of every Klein Plier can satisfy men whose work demands the best in tools. This, perhaps, explains why Klein Pliers are the standard of quality by which others are judged — why the name Klein has stood for maximum quality, "since 1857."

DISTRIBUTED THROUGH JOBBERS

Foreign Distributor: International Standard Electric Corp., New York

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The four pamphlets listed below will be sent without charge to anyone interested. Check the ones you want:

- ☐ **Safety for the Pole Climber.**
- ☐ **Specifications on Linemen's Belts and Safety Straps.**
- ☐ **The Safety Factor on Linemen's Leather Goods.**
- ☐ **Pocket Tool Guide.**

Mathias KLEIN & Sons
Established 1857 — Chicago, Ill. U.S.A.

3200 BELMONT AVENUE

New Pole Preservative Specifications Announced

Tentative specifications covering the protective treatment for wood poles have been prepared by the American Wood-Preservers' Assn. The specification is noteworthy in that it follows a new technical procedure, being in effect a result rather than a process specification. The requirement for depth of penetration is expressed absolutely or in percentage of sapwood thickness. This requirement is based on studies of a vast number of poles in service throughout a variety of climatic conditions for years.

The new specification displaces rule of thumb inspection of preservative treatment with definite requirements relating to test borings. It is designed to secure a product at the lowest cost consistent with adequate pole life. Copies of the new specification, which will be presented for adoption in the early part of 1937, are available at the office of the American Wood-Preservers' Assn., 1427 Eye St., N. W., Washington, D. C.

●

HANGARS of the United Air Lines are now being illuminated by General Electric mercury-vapor lamps for reproduction of daylight in making exacting inspections of the flying fleet. Involved in the West are hangars at Cheyenne, Salt Lake City, Oakland, Burbank, Portland and Seattle. At Cheyenne, where 500 mechanics overhaul planes and rebuild engines after every 500 hours service, vapor lamps are used throughout engine and instrument repair shops. H. O. West, superintendent of engineering for the lines, announced that vapor lamps are also being specified for all municipal airport projects now being contemplated throughout the transcontinental and West Coast systems.

●

A 4-H CLUB CONTEST, for boys and girls who are members of that organization, dealing with rural electrification will be sponsored again this year by Westinghouse Electric & Mfg. Co. Awards will be based on contestants' reports. National prizes, the company announces, consist of three scholarships of $400, $300 and $200; ten sectional prizes will consist of a week's trip to Chicago to the Sixteenth National 4-H Club congress and state winners will receive $50 in merchandise.

●

National Drive Planned To Promote Water Heaters

The first planned, national drive to promote electric water heaters will get under way shortly as the result of a cooperative plan undertaken by the Edison Electric Institute and the electric water heating section of the National Electric Manufacturers Assn. Heading the joint activity is Kinsey M. Robinson, president of the Idaho Power Co.

Activities will be directed by the Chicago office of Maxon, Inc., under L. J. Sholty, vice-president. A plan book on the joint EEI and NEMA activity is in preparation and will be sent to leading utilities.

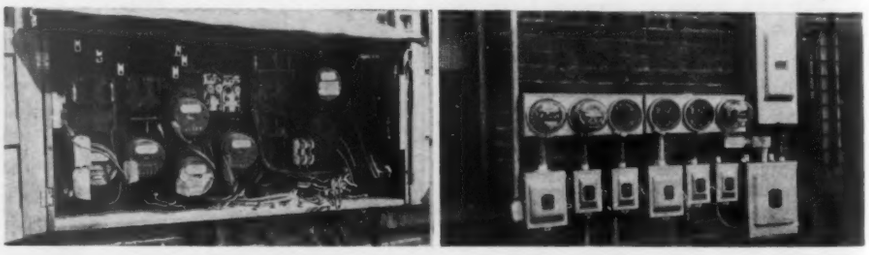
Embodied in the program are: continuation of the section's support to electric kitchen modernizing; broadening of the section's statistical activities; cooperation with utilities in establishing a standard test procedure; joint activity toward standardizing production operations; establishing a bureau to provide the trade press and other publications with accurate technical and commercial information.

●

THE HANDBOOK of Interior Wiring Design is now available from headquarters of the cooperating associations. The handbook consists of 80 pages, 8½ x 11 in., profusely illustrated with halftones, drawings and tabular material. Orders may be placed direct in any quantity from one up according to the following price schedule:

1 to 4 copies	$1.00 each
5 to 9 copies	.50 each
10 to 49 copies	.35 each
50 to 99 copies	.30 each
100 to 499 copies	.25 each
500 and over	.20 each

Does Reinspection Pay?



Here's before and after evidence that reinspection does pay. Manufacturer, wholesaler, contractor and owner profited from this remodeling, undertaken by the Hendee Electric Shop in Fresno, and the inspection department saw a dangerous condition eliminated

New Bonneville Bill Fails to Settle Key Issues

Washington, D. C., Correspondence—Conclusions reached by the Ickes power policy committee in regard to the disposition of surplus power from the Bonneville project on Columbia River, were revealed Feb. 19, by the introduction of a bill avowedly intended to give effect to the committee's recommendations. The bill was introduced by Representative Martin L. Smith of Washington, following a White House conference at which the committee's report was discussed before the Congressional delegations of the states affected.

The new solution to the Bonneville marketing problem is set up on a provisional basis, subject to change when a more permanent set-up is devised for Bonneville and other projects in the Columbia River Basin. It proposes that the completed project shall be operated, maintained and improved by a Columbia River Administrator to be appointed by the Secretary of the Interior at a salary of $10,000 per year. This administrator shall be advised by a three-man board composed of representatives of the War Department, the Federal Power Commission, and the Department of the Interior. He shall have full authority to install additional generating facilities, to operate the plant, to contract for the sale and interchange of power, and to build, buy or acquire by condemnation proceedings all necessary distribution facilities. Operation of the navigation locks, however, remains a function of the Corps of Engineers, under direction of the Secretary of War.

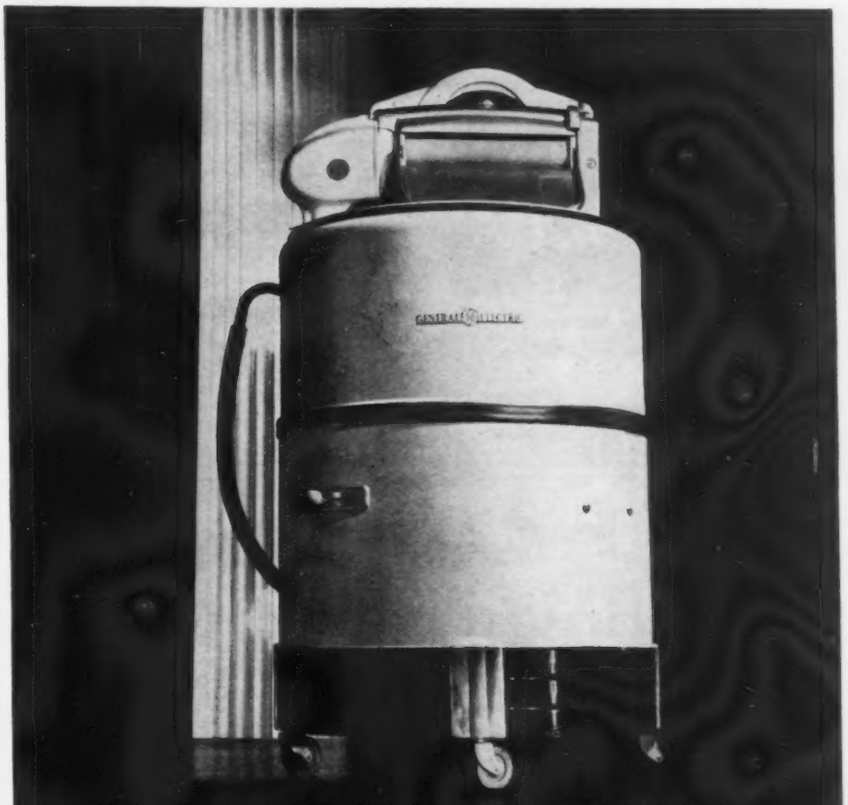
In all other respects the new bill follows the pattern set last session, when a number of measures were introduced, but failed of passage. Continued is the statutory preference for public and cooperative distributors in the allocation of power, with 50 per cent of the firm power reserved until Jan. 1, 1939, to permit formation of cooperatives and power districts. Power contracts are to extend for not more than 20 years, including any renewal period, and are to carry provisions for rate revision at intervals of not over five years. Contracts with private purchasers also must contain a provision for cancellation upon five years notice, in the event energy is needed for public or cooperative distribution.

The administrator is directed to prepare rate schedules and submit them to the Federal Power Commission for approval.

"Such rate schedules shall be fixed with a view to encouraging the widest possible use of electric energy, having regard to the recovery, upon the basis of the application of such rate schedules to the capacity of the electric facilities of Bonneville project, of the cost of producing and transmitting such electric energy, including the amortization of the capital investment over a reasonable period of years. In computing the cost . . . there may be allocated to the cost of electric facilities not simply the cost of such facilities, but also such a share of the cost of (other) facilities . . . as the power development may fairly bear . . . The rate schedules may provide for uniform rates or rates uniform throughout prescribed transmission areas. . ."

These quotations from the new bill show clearly the ample latitude allowed the administrator to set rates within wide limits, subject only to FPC approval. Costs chargeable to power are dependent upon his discretion, and he is free to adopt either a policy that blankets transmission costs (the "postage-stamp rate") or its converse, a sliding-scale system under which power cost would vary with the distance transmitted. Thus the committee leaves for future determination the two most controversial features of the Northwest's "yardstick" plant.

Allocation of transmission costs is of great significance in the Bonneville case because ability of the project to carry its charges is contingent upon its prompt expansion to full generating ca-



IF every dealer who does not sell General Electric Washers and Ironers knew what every dealer who does sell General Electric Washers and Ironers knows, *every* dealer would sell General Electric Washers and Ironers!

G-E Dealers are cashing in on the highly productive Spring Sales Drive on General Electric Washers and Ironers. Are you one of them?

Current Sales Help

Permanent Sales Help

GENERAL ELECTRIC

WASHERS AND IRONERS

APPLIANCE AND MERCHANDISE DEPT., GENERAL ELECTRIC CO., BRIDGEPORT, CONN.

FOR
- *Lasting Economy*
- *Strength*
- *Safety*

USE

LOCUST PINS
Oak Brackets and Pole Steps

LOCUST PIN CO. FRONT ROYAL, VA.
Maydwell & Hartzell, Inc.
Los Angeles ★ San Francisco

A Real Time Saver!
HARTMAN UTILITY NIPPLE

● YOU save time with the Hartman offset nipple.* Its design permits mounting of switches and similar equipment where knockouts don't line up. Standard sizes ½, ¾, 1¼, 1½ and 2 in. Write today for full information.

**Patent applied for.*

B. HARTMAN 168 Sunset St. Long Beach, Cal.

pacity in a market already highly developed. Proponents of the "postage stamp" rate claim that this can best be done by spreading the cost of a transmission system over the entire project, thus widening the area in which the new plant can compete with existing facilities and subsidizing distant consumers. Opposed to this is a faction convinced that the only hope of building up a large demand lies in the development of industries to be located close to the dam, to be attracted by ample power at the cost of generation only. More distant communities, they claim, are already well served at reasonable rates, and should receive Bonneville power only if they are willing to pay the costs of generation and transmission to the area of use.

●

LT. COL. CHARLES F. WILLIAMS, of the 2nd Portland District, United States Army Engineers, will be transferred this year to Fort Belvoir, Va. During his 4 years in Portland, the first phase of Bonneville power and navigation project has been nearly completed. No successor has been appointed.

●

CLAUDE HENDON, manager of the heating device section, G. E. Merchandise Division, Bridgeport, was a Pacific Coast visitor during February.

About People

Portland Club Honors Merwin

Honoring L. T. Merwin's 26 years of distinguished service to the electrical industry in Portland, the Portland Electric Club on Feb. 11, assembled the largest industry group ever to meet in the city. Mr. Merwin, president of

L. T. Merwin (left) receiving token of honorary membership in the Portland Electric Club from Verne M. Miller. At right is Franklin T. Griffith

Northwestern Electric Co., was presented with honorary life membership by Verne M. Miller, North Coast Electric Co., club president.

Principal speaker was Franklin T. Griffith, president, Portland Electric Power Co., only other honorary member. Berkeley Snow, one of the club's founders, was toastmaster, and Tom Perry, Northwestern Electric Co., recounted amusing experiences with Mr. Merwin in Goldfield, Nev., 30 years ago.

The lunch, in the Multnomah Hotel ballroom, was attended by 215 members of the industry.

●

Olson Appointed to G. E. Lamp Managership

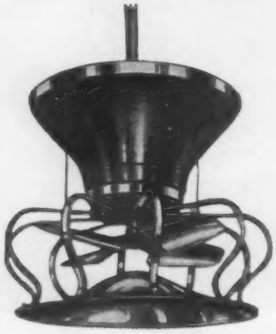
Harold A. Olson of General Electric Co. Incandescent Lamp Department has been appointed North Pacific Division manager, with headquarters in Portland. He fills the vacancy occasioned by the death of J. F. Reinke. Mr. Olson goes to Portland from Cleveland, where he was assistant manager of the Buckeye Division of the company.

Joining G. E. at Nela Park in 1916, Mr. Olson was later granted leave to attend Syracuse University. He graduated in electrical engineering in 1923, after having served in the World War.

●

E. H. ADAMS, vice-president of the British Columbia Electric Railway Co., Vancouver, has returned from Montreal, where he presided at the annual winter conference of the Canadian Electrical Assn.

KISCO **Correct Ventilation**
Air Recirculation and Cooling



One and Two Speed Direct Motor Driven Exhaust Fans

Belt Drive Exhaust Fans

Pedestal, Ceiling, and Wall Bracket Air Movers

The "Homilator"— Attic Exhauster

The Kisco Modern "Deflecto" Air Recirculator

Here is the last word in correct air circulation. The "Deflecto" draws the air from the coolest area—the floor—and recirculates it, outwards and over a wide area, without disturbing the hot air which accumulates at the ceiling. Offered in one and two speeds.

Exhaust Fans

When a Kisco Exhaust Fan "Goes In", the fumes and polluted air "Go Out". The correct design and construction alone enables us to offer you KISCO Exhaust Fans and Air-Movers under a Money-Back Guarantee. You must be satisfied. Kisco offers the most complete selection of Exhaust Fans and Air-Movers with 2, 4, or 6 blades. Sizes 16 to 42", air deliveries 2500 C.F.M. to 17800. Single or Two Speed.

Kisco Ventilation Is Sold on Performance—Not Inches

KISCO COMPANY, INC. ST. LOUIS, MISSOURI
SMALLCOMB ELECTRIC CO., 507 E. 7th ST., LOS ANGELES

UNUSUAL OPENINGS FOR ACTIVE DEALERS

Appliance Society Chooses Officers

Meeting in San Francisco recently, the Electrical Appliance Society of Northern California elected G. W. Farwell, Sterling Furniture Co., as president for the coming year. E. Popovich, The Emporium, was elected vice-president, and O. E. Rush, Pacific Gas & Electric Co., treasurer. Elected to the board of directors were:

W. C. Cohen, R. E. Crane, F. S. Fenton, E. M. Frellson, W. K. Glasby, I. F. Harris, W. B. Hocking, R. Hurd, M. E. Jackson, R. Kimberlin, M. Levy, J. Lynn, D. McBride, S. W. Newman, E. P. Phillips, G. Plevin, O. Rothlin, A. Scott, F. G. Shultz, R. Stanforth, F. Talcott, J. T. Templeton.

●

A Horse on Him

Had Walter Winchell known either Patches, the mother (resting chin on barn door), or the stable boy who failed as a chaperone (not shown), Ted Coe, president of Central Arizona Light & Power Co., might have been less surprised at this addition to his stable. But who could refuse the little gal a home? Ted named her Ginger

●

OLD TIMERS helped put over with a bang the recent installation of officers at the San Diego Electric Club. Original officers of the club, when founded in 1921, are still members. They are A. E. Holloway, J. F. Zweiner, Bert Scott and Sam L. Hall. A. V. Engel, Southern Calif. Telephone Co. has been installed president for 1937 together with H. A. Noble, San Diego Consolidated Gas & Electric Co., vice-president, T. P. Richardson, same company, secretary.

DR. F. A. OSBORN, head of the Physics Department, University of Washington, Seattle, has been appointed chairman of the western Washington representative committee of the Illuminating Engineering Society. Committeemen are Ted Bakeman and Roy Leonard, both of Seattle.

●

Canadians Elected To Civic Posts

Two Canadian electrical men last month were seated as mayors of their respective cities. Fred J. Hume, head of Hume & Rumble, electrical engineers, was elected for his fourth successive term as mayor of New Westminster.

George Miller, who operates the Pacific Distributing Co., Vancouver, was elected mayor of that city. Mr. Miller is a charter member of the Vancouver Electric Club and has been a member of the Vancouver city council since 1928.

Also elected in New Westminster was William B. Mott as city alderman. Mr. Mott is an electrical contractor and retailer, is well known in sporting circles, coaches the New Westminster Cubs hockey team.

HONN'S SERVICE BUILDS BUSINESS

Geo. E. Honn Company
420 Market St., San Francisco

Manufacturers Representative for:

Tree Trimming Equipment
● Bartlett Manufacturing Co.

Friction and Rubber Tapes
● Clifton Manufacturing Co.

Pyrex Insulators
● Corning Glass Works

Transformers
● Gardner Electric Mfg. Co
Power and Distribution Transformers
● Lee Skipwith & Co., Inc.
Niagara Air-Insulated Current Transformers

Poles and Cross Arms
● Mineralized-Cell Wood Preserving Co.

Cable Grips
● Kellems Products Inc.

Neon Multiple Plug Fuses
● Pacific Indicator Co.

Fuses, Cutouts, Protective Devices
● Schweitzer & Conrad, Inc.

Connectors, Ground Rod Clamps, Utility Hoists
● Jasper Blackburn Products Corp.

Thermador

ELECTRIC HEATERS

Provide "Head to Heels" warmth in the bathroom

"The year's best seller"—that's what dealers call the Thermador electric bathroom heater. They're easy to sell and easy to install in old homes as well as new.

A snap of the switch delivers instant, glowing, healthful warmth at a surprisingly low cost.

Write today for complete descriptive literature and price lists on Thermador electric room heaters and water heaters.

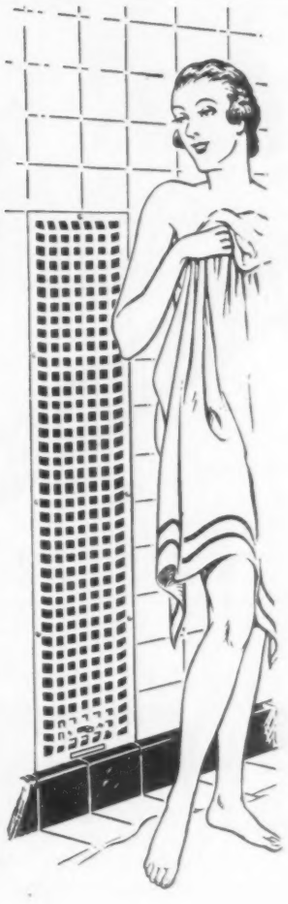
"Seven Leagues Ahead"

Thermador Electrical Mfg. Co.

Factory—2821 East Pico Blvd., Los Angeles

557 Market St.
San Francisco

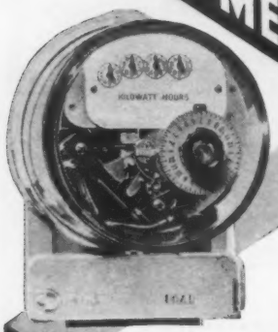
Builders Exchange
Fresno



METER
and
CONTROL
Off-peak Loads
with

MODERN METERS

Sangamo Type HV-S-2
Two-rate Meter, Socket
Mounting



Sangamo Type HV-A
Meter and Time-Switch
in "A" Base

For MODERN LOADS

Western
Offices:
LOS ANGELES
326 Subway Term. Bldg.
SEATTLE
220 Ninth Ave. N.
PHOENIX
1318 W. Lynwood St.
SAN FRANCISCO
1061 Howard St.
DENVER
1526 Blake St.

SANGAMO
ELECTRIC
COMPANY
SPRINGFIELD, ILLINOIS

Right Dress

It is Harry Hartzel (next to right) and Gene Braun (right), both of San Francisco, who have unconsciously assumed the positions of corporals, while lined up as a squad are (left to right) Bob Young, and Ed Hannah, both of Los Angeles, Harry DeLancie, San Francisco, and Earl Condon, Los Angeles. This Maydwell & Hartzell squadron participated in sales maneuvers at the St. Louis conference last month of the James R. Kearny Corp.

PROMOTIONS announced by D. B. Leonard, commercial manager of the Pacific Power & Light Co., advance J. A. Lockhart to the position of commercial sales supervisor in charge of sales of all types of services to commercial customers. G. B. Bocarde, formerly in charge of lighting sales, in a new position designated as field sales supervisor, assumes the duties formerly handled by Mr. Lockhart. Headquarters for both men remain in Walla Walla, Wash.

●

EDWARD A. WEST, for 12 years vice-president and general manager of the Utah Light & Traction Co., has been appointed vice-president, general manager and director of the Florida Power & Light Co. He will make his home in Miami. Mr. West was credited with introducing trackless trolleys in Salt Lake City, and at one time taught engineering at Denver University.

●

FRED R. GROCH has been transferred to the Wesix factory at Los Angeles, according to W. Wesley Hicks, president, where he will make his headquarters at the factory.

●

ARTHUR P. MATTHEWS has been added in San Francisco to the field representatives of the Leonard merchandising division of Nash-Kelvinator Corp.

●

J. F. LINCOLN, president of the Lincoln Electrical Mfg. Co., Cleveland, Ohio, was a recent visitor to Victoria, B. C.

EARL HOTALING has been appointed sales manager of Apex Rotarex Manufacturing Co., Oakland, succeeding Ralph Kortepeter. Mr. Kortepeter has gone to Cleveland, where he has been promoted to refrigeration division manager for Apex Rotarex Corp. Mr. Hotaling for three years has been Los Angeles district sales manager for the Manufacturing company.

●

H. W. HALE, automotive products field representative of General Electric's Appliance and Merchandise Department, has been transferred from Boston to the San Francisco office, where he will be responsible for sales and service of automotive products.

PROFESSIONAL SERVICES

ELECTRICAL TESTING LABORATORIES
Electrical Photometrical, Chemical and Mechanical Tests. Inspection of Materials and Apparatus at Manufactory.
80th St. and East End Ave., New York

ARTHUR R. KELLEY
CONSULTING ENGINEER
Reports and Valuations, Public Utility Industrial Properties
Edison Bldg. Los Angeles

Kelvinator goes on the air March 6TH!

A NEW KELVIN HOME

The first prize in Kelvinator's Big Radio Contest will be a Kelvin Home, complete with year 'round air conditioning, electric or gas range, electric refrigerator, constant hot water, electric laundry equipment. The last word in modern living!

Half-hour Program

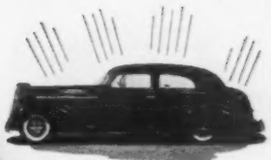
SATURDAY EVENINGS AT 8:00 E.S.T.

COAST TO COAST HOOK-UP OF 55 STATIONS ON THE COLUMBIA CHAIN

TWO BIG CONTESTS

FIRST PRIZE—A KELVIN HOME

AND MORE THAN A THOUSAND OTHER PRIZES INCLUDING NASH CARS • REFRIGERATORS • ELECTRIC AND GAS RANGES • WASHING MACHINES • ELECTRIC IRONERS • AND CASH



A NASH AUTOMOBILE

Included in the other prizes will be completely equipped Nash cars—one of the country's finest and most beautiful automobiles. Big, roomy, perfectly appointed automobiles, that anyone would be proud to win and drive.

A program built to produce FLOOR TRAFFIC

Kelvinator will not only have a thrilling program that will appeal instantly to everyone, but will have two big contests that will bring people in great numbers to the stores of Kelvinator dealers.

The contests are fascinating and yet so simple that anyone can enter with a real chance of winning. There is nothing to buy—no tiresome essays to write, but every contestant must visit a Kelvinator dealer in order to secure entry blanks and rules of the contests. This means Floor Traffic for Kelvinator dealers—and because of the nature of the contests, it will mean floor traffic composed of men and women who will be anxious to learn all they can about Kelvinator appliances for their homes.

And this radio campaign with its Two Big Contests is only one of the many sales promotion features of the 1937 Program. Only one of the things which is going to make 1937 the greatest year in history for Kelvinator dealers and salesmen.

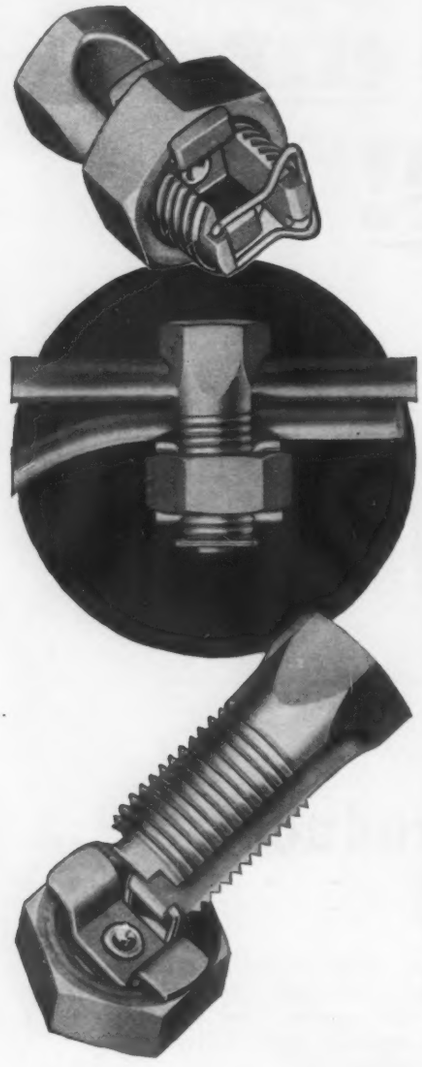
KELVINATOR • DIVISION OF NASH-KELVINATOR CORPORATION
DETROIT, MICHIGAN

Kelvinator

ELECTRIC REFRIGERATORS • RANGES • WASHING MACHINES • IRONERS • AIR CONDITIONING EQUIPMENT

Reliable

HINGED - NUT CONNECTORS



Made of High Strength Bronze, 90% copper, with uniformly machined threads and fine workmanship—outstanding in convenience, efficiency, and strength.

Reliable ELECTRIC COMPANY
OVER 25 YEARS SERVICE TO THE UTILITIES
3149 FARRELL AVENUE CHICAGO, ILLINOIS

G. E. Appoints In New Sales District

George S. West has been appointed manager of appliance sales for District 13 of the Appliance and Merchandise Department, General Electric Co., with headquarters in San Francisco. J. J. Burns has been appointed assistant district manager in San Francisco. C. W. Griffin will continue as district radio sales manager in Los Angeles.

District 13, in the reorganization of General Electric appliance sales, consolidates the products of the Specialty Appliance Sales Division, Cleveland, (refrigerators, ranges, water heaters, dishwashers, disposalls and commercial refrigeration); the Household Appliance Sales Division, Bridgeport (home laundry equipment, vacuum cleaners, fans, clocks, heating devices and sun lamps), and the Radio Sales Division, Bridgeport (radios and metal tubes). Division 13 includes Washington, Oregon and California.

●

C. T. Carson, formerly commercial refrigeration salesman with Jensen-Byrd Co., Spokane, recently purchased the Mutual Creamery Appliance Store of Pullman, Wash., and renamed it Carson Appliance Store. He handles Frigidaire, Monarch and General Electric ranges, Easy washers and ironers, Zenith, Spartan, Gilfillin and Kadette radios.

●

William H. Hodge, manager of sales and advertising for the Public Utility Engineering and Management Corp. (formerly Byllesby Engineering and Management Corp.), was the feature speaker at the Electric Club of San Diego, Jan. 26. He spoke on the subject "What Do the Power Companies of the United States Think of 1937 Business Possibilities?—What Are They Doing Cooperatively to Assist the Manufacturer, Distributor, Dealer and Contractor?" A. E. Holloway, vice-president, San Diego Consolidated Gas & Electric Co., was chairman of the day.

●

Changes in the Montgomery Bros. organization this month will place W. L. Montgomery in the San Francisco office in charge of the northern California territory, and D. Y. Robinson in Seattle as district (includes Tacoma and Spokane) manager there.

●

L. E. Taufenbach has resigned as sales manager of the Gibson Electric Refrigeration Corp. Appointed coast manager of the corporation, he has established offices in the Los Angeles Furniture Mart.

For Western
Banking Service

CROCKER FIRST NATIONAL BANK
OF SAN FRANCISCO

Member Federal Deposit Insurance Corporation

Underground Transmission

Note the air and moisture proof flexible coverings. Sealtite represents a distinct advance in parkway cable construction. It is more pliable than any other underground cable . . . and costs are considerably lower.

Without Conduit

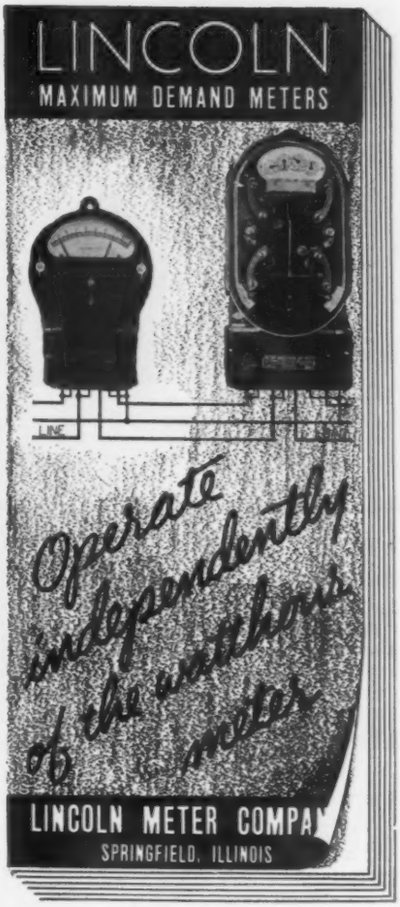
Write for booklet offering suggested uses and explaining long life.

SEALTITE
Parkway and Airport Cable with Maximum Flexibility
by
PROVIDENCE

MAYDWELL & HARTZELL
INCORPORATED
ELECTRICAL ENGINEERS
and
MANUFACTURERS' REPRESENTATIVES
Los Angeles ★ San Francisco

Spreading the Light

George Rankin, director of lighting, Southern California Edison Co., and his energetic, sales-producing crew together for a sales meeting. They're making southern California business men light-conscious. In the front row, left to right, are A. McKaig, B. F. Miller, F. K. Sampson, W. G. Bausman, L. G. Bachand, W. J. D. Porter, R. E. Thompson. In the middle row, left to right, are W. T. German, E. B. Kruger, J. M. Thorburn, J. C. Baker, J. J. Love, D. W. Gilfillan, C. G. Lindsey, P. Chambers. In the rear row, left to right, are T. E. Esling, A. L. Pryor, H. T. Crane, J. H. Peters, G. M. Rankin, director of lighting, L. H. Clark, D. H. Miller, Jr., and L. C. Reuscher. A. B. Foley, another member of the crew, was absent



HAROLD KONGABLE is new president of the El Paso Electrical League. Otto Vetter is vice-president; B. F. Turbeville, secretary.

●

GEORGE D. NORRIS of Seattle, Wash., has been appointed sales representative for Washington, Oregon, Idaho, Montana, Northern Utah and Southern British Columbia by Clarostat Mfg. Co., Inc., Brooklyn, N. Y. Mr. Norris will contact the jobbing trade in those territories, as well as the few manufacturers.

●

WILL H. DAVIE, president of Allied Industries, Inc., Los Angeles, announced that effective Dec. 5, W. J. Cottrell was no longer with the organization, and that the Portland office will be operated in conjunction with the Seattle branch under E. A. Will, in charge of the entire Northwest territory. There will be no change in handling Portland detail through the Portland office.

●

MARTIN MONTGOMERY has been appointed British Columbia manager of the English Electric. The firm has established a new district office at 510 West Hastings St., Vancouver. C. F. Domoney has been placed in charge of a branch office at Nelson, B. C.

PROTECTION

Against Short Circuits!

McGILL Portable Lamp Guard No. 999

Here is the ideal guard for use around switchboards, panelboards and wherever protection against short circuiting is vital.

1—Hard, molded rubber hook with steel core.
2—Pliable, molded rubber vulcanized to rubber hook.
3—Heavy fibre disk resting on solid rubber ledge to hold wires—knotted for relieving pull and strain on socket connections.
4—Special McGILL 660-watt, weatherproof Levolier socket.
5—Short-proof, spark-proof, molded Insurok cage.
6—Built-in reflector.
7—Countersunk screws at end and at base.
8—Symbol of Underwriters' Laboratories.

ORDER FROM YOUR WHOLESALER

McGILL MANUFACTURING COMPANY

World's Largest Lamp Guard Manufacturers

VALPARAISO, IND.

Box No. 604

Only CHROMALOX
Super-Speed RANGE UNITS

have the economical and convenient "Two-Burners-in-One" feature. They also have exceptional cooking speed, and the immunity to damage that cuts down "trouble calls". Specify them on the ranges you sell.

EDWIN L. WIEGAND CO.
PITTSBURGH, PA.
Represented by
MONTGOMERY BROTHERS
911 Western Ave., Seattle, Wash.
1501 N. W. Kearny St., Portland, Ore.
61 Fremont St., San Francisco, Calif.
912 E. 3rd St., Los Angeles, Calif.
THE PETERSON COMPANY
1921 Blake St., Denver, Colo.

THE SAFE ANCHOR FOR R. E. A. CONSTRUCTION!

For long life and economy in annual maintenance costs, Everstick Anchors are first choice in rural electrification construction. Their safety and dependability have been proven on millions of miles of electric lines.

ANCHORS FOR EVERY PURPOSE

The complete line of Everstick Anchors offers three expanding types in a complete range of sizes and holding capacities. Also rigid type Cone Anchors in all sizes. Made of malleable iron with its properties of strength, elasticity and rust resistance. Write for new bulletin "Everstick For Rural Electrification."

☆

The Everstick Anchor Co. FAIRFIELD, IOWA

Maintenance Engineers Enlarge Directorate

Walter E. Coburn, Los Angeles Board of Education, was reelected president of the Electrical Maintenance Engineers Assn. at its annual election meeting Jan. 19. E. E. Lombard, Bethlehem Steel Co., was elected vice-president and C. F. Kimball, Ford Motor Co., was re-elected secretary-treasurer. Three new members were also named to the executive committee. They were Thomas Hughes, E. K. Wood Lumber Co.; Carl Andre, National Tank & Manufacturing Co. and C. C. Gifford, L. A. Shipbuilding & Drydock Co. The nominating committee was composed of Emerson Reichard, Lloyd B. Near and Jerry Ellis.

●

W. B. L'HOMMEDIEU, Westinghouse Electric & Manufacturing Co., San Francisco, was elected president of the San Francisco Electrical Development League in February. John W. Otterson was re-elected secretary-treasurer. New directors include Robert Hudson, consulting electrical engineer, Hunter & Hudson; Leonard Fryer, Graybar Electric Co., and Fred Hanson, Pacific Gas & Electric Co. Mr. L'Hommedieu succeeds Fred Allen, Market St. Railway Co. who through illness during his entire term was unable to preside.

●

HAROLD L. OLESEN, assistant sales manager, The Weston Co., makers of instruments, has been in the West since January, stopping en route at Tucson, Phoenix, Los Angeles, San Francisco, Portland and Seattle. In San Francisco Mr. Olesen addressed the San Francisco Bay Cities Chapter, Illuminating Engineering Society.

●

WILLIAM B. WALKER has joined his father, H. H. Walker, in the firm of H. H. Walker, Inc., electrical contractors, of 1323 Venice Blvd., Los Angeles. William Walker is a graduate of Stanford School of Engineering, 1932, and of Stanford School of Business, 1934. He was later associated with Paraffine Companies, Inc., at Emeryville, in the production control department. He recently resigned that position to join his father in the electrical contracting business at which he has been engaged during school vacations since a boy.

●

MAGNUS C. CROSBY has been named manager of the Philco wholesale branch for the Sunset Electric Co. in the Pacific Northwest, with offices in Seattle.

●

A. P. SCHWAGER, formerly chief engineer, Pacific Electric Mfg. Corp., has been elected vice-president in charge of engineering.

T. L. ROSENBERG, T. L. Rosenberg Co., Oakland, was recently elected president of the Motor Dealers Assn. of Northern California, succeeding Lou Douat, of Buzzell Electric Works, San Francisco, E. E. Douglas, Enterprise Electric Works, San Francisco, was named vice-president; F. O. Sievers, Kuchel-Sievers Electric Works, treasurer, and Ken Ryals, Stone-Ryals Electric Co., re-elected secretary. The directors include the above, Dan Bronson, California Electric Co., Ltd., Oakland, and Frank Cole, West Coast Electric Works, San Francisco.

●

C. E. BRABYN, Sears Roebuck Co., who was assistant manager at the San Diego, Calif., branch, has replaced S. C. Monks as assistant manager in Portland. Mr. Monks in turn, has taken over Mr. Brabyn's job in San Diego.

●

B. J. BRUGGE has been added to the Los Angeles staff of Lincoln Electric Co., as a welding consultant. He is experienced in oil refinery and pipe line welding applications.

●

GEORGE CULLINAN, vice-president and general manager of Graybar Electric Co., Inc., visited Pacific Coast Graybar houses last month.

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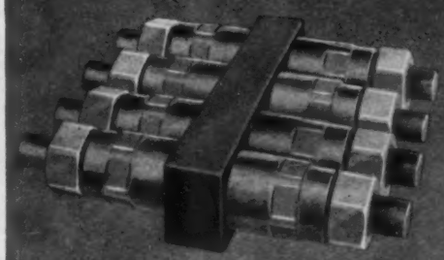

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• To use the directory, find the manufacturer's name and call upon the nearest branch office or agent. In case the manufacturer's name is unknown, refer to the Where-to-Buy section of Electrical West and look under the name of the product desired. Readers who desire buying information on any electrical product or its manufacturer are invited to use Electrical West's Service Bureau. A telephone call, telegram or letter to 883 Mission St., San Francisco, will bring an immediate response. A trained staff is ready to help solve your problems.

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ADAM ELECTRIC CO., FRANK, St. Louis, Mo.—Zinsmeyer, Inc., Los Angeles; L. Brandenburger, Salt Lake City; Fred E. Staible, Inc., Denver; Wm. R. Miller, Albuquerque.

AJAX ELECTROTHERMIC CORP., Trenton, N. J.—E. A. Wilcox Co., San Francisco; J. Max Lee Co., Los Angeles.

ALLIS-CHALMERS MFG. CO., Milwaukee, Wis. — Western Branch Offices: Spokane, Medford. Western District Offices: Seattle, Portland, San Francisco, Los Angeles, Denver, Salt Lake City, Phoenix.

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ARROW-HART & HEGEMAN ELEC. CO., The, Hartford, Conn.—Arrow Electric Division, San Francisco, Los Angeles; Garnett Young & Co., Seattle, San Francisco, Los Angeles.

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AUTOMATIC WASHER CO., Newton, Ia.—Ben Franklin Elec. Co., Seattle; S. J. McCormick Co., Portland; Hughes & Co., Spokane, Billings, Great Falls; Jordan & Co., Los Angeles; Robt. F. Clark Co., Denver; Western Supply Co., Salt Lake City.

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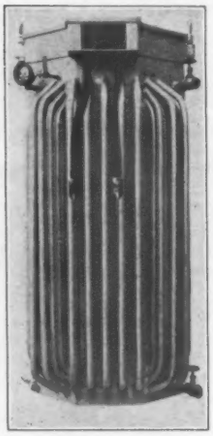

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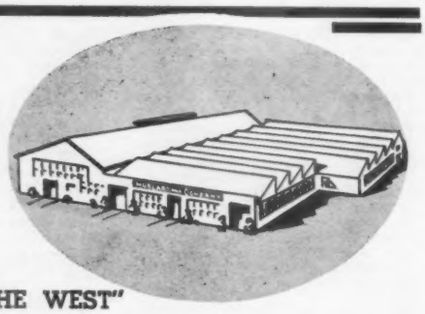

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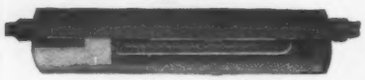

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CONTROL OF ELECTRIC MOTORS, by Paisley B. Harwood; 390 pages; published by John Wiley & Sons, Inc.; $4.50. The book is published for those concerned with the specification, purchase, design, installation or operation of controllers. Motor characteristics are described briefly, and the use of these characteristics for control purposes is explained. Control devices are discussed with regard to design, construction and operation, and the methods of combining these devices to secure a desired result are described.

●

ELECTRIC POWER ON THE FARM is a 170-page booklet edited by David Cushman Coyle for the Rural Electrification Administration and available from the Superintendent of Documents, Government Printing Office, Washington, at 25c. Containing many a plug for REA, and an expurgated history of rural electrification with many an omniscient comment on what utility men have thought, it is described by REA as "a handbook on rural electrification.

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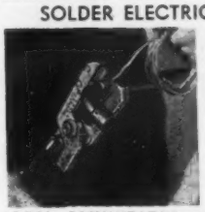

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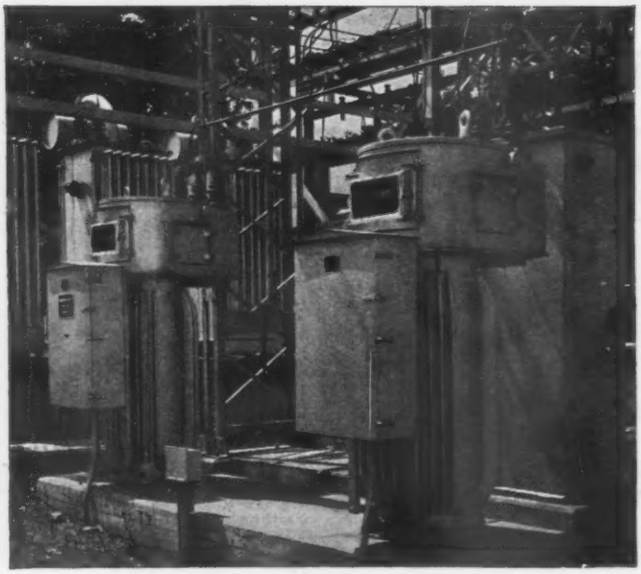

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